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English Mediæval Architecture from Ancient Seals.

THE following notes are based upon examples of seals from the splendid collection of casts and impressions preserved in the British Museum, of which an excellent catalogue has been printed with copious notes and descriptions. It may be as well to explain at the outset that the writer has purposely passed over the large number of seals which contain only the conventional design of a niche and canopy enclosing the figure of a saint. This type of design is so common, and the differences of detail so slight, that it was thought more profitable to devote attention to the more unusual examples of architecture hereafter referred to.

In considering the rendering of architectural subjects upon seals and the frequently grotesque nature of their representation, it is well to remember that the very limited space available imposed great restrictions upon the artists. It is probable also that most buildings were purposely conventionalised, and, except in rare instances, were not intended as faithful representations of the originals. No notice has been taken of seals later than the XVth century, but they would form a very good subject for separate study on another occasion.

The present subject falls naturally into three divisions—civic, military, and ecclesiastical. Of these the first two are so intimately connected that they may be merged into one, since the seal of a mediæval borough frequently partakes of both characters. The third division can conveniently be arranged under the sub-headings of cathedrals and monastic buildings, though there is very little difference between the two from an architectural point of view.

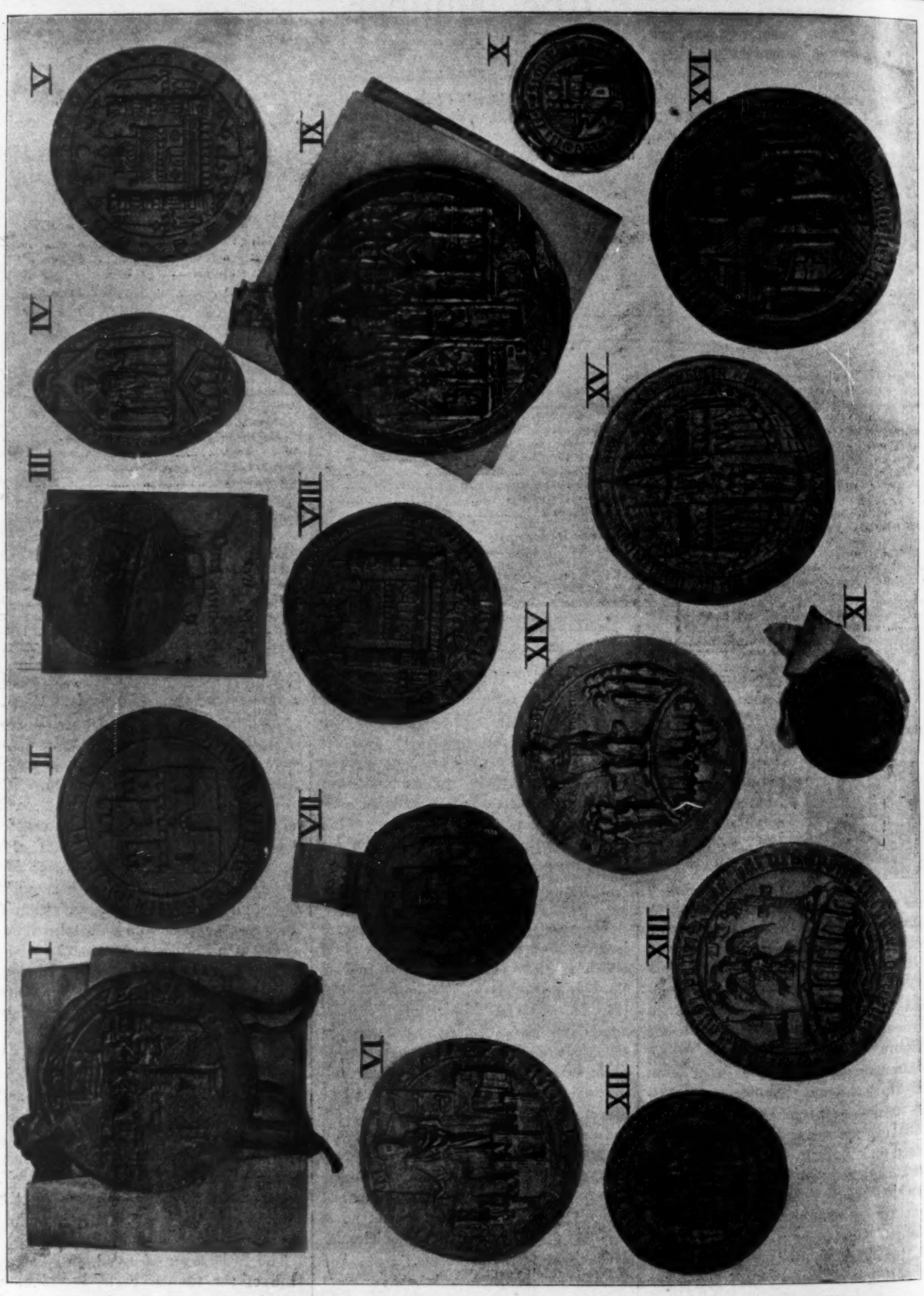
Civic and Military Buildings.

The usual type of castle represented is that known as "triple-towered," of which an early example is displayed on the city seal of York, dating from 1100 (Fig. I.). This has a very archaic appearance, and shows interesting details in the arcaded gallery under the battlements of the flanking towers, the flying buttresses or ladders attached to them, and the diapered wall-surfaces. Other XIIth century castles occur on the seals of Bridgnorth, Salop (Fig. II.), Marazion, Cornwall (where the execution is coarse and rough), and Bridgwater, Somerset (Fig. III.), where a castle of three floors stands on a bridge of four semicircular arches over the River Parret.

Of XIIIth century work we have more than a score of examples. The corporation seal of Bath shows a small building enclosed within an embattled wall, straight in front, circular in rear, probably intended to indicate the famous bath. Cambridge University possesses a fine seal dating from about 1261 (Fig. IV.), in which, under a figure of the Chancellor, a bridge of four pointed and enriched arches is seen over the River Cam. Colchester exhibits a triple-towered castle with a round-arched doorway. Underneath is a bridge of three arches over a stream with fish. The castle doors have ornamental hinges, and the porter is shown in the act of opening them. The work of this seal is peculiar and coarse in style. Exeter (Fig. V.) has a remarkable building of two stories with a pent roof and two flags standing between two circular embattled towers with arcading and numerous string-courses. Beyond the towers appear two embattled doorways with enriched hinges, and the whole design is very interesting. London, as might be expected, possesses a fine seal (Fig. VI.). St. Paul, the patron saint, stands on the tower of the Cathedral holding a sword and a banner of England. Beneath is the City wall, with a gate in the centre, enclosing the Cathedral and other churches, and in front flows the River Thames. The reverse of this seal shows St. Thomas of Canterbury enthroned over a large semicircular arch, below which is another view of the City surrounded by its fortifications, and with the Cathedral in the midst.

The little town of Lydd, in Kent, a limb of the Cinque Ports, combines a church, with a tall spire terminated by a cross and flag, together with a one-masted warship. Marlborough's town seal has a fine but imperfect castle, triple-towered, and with round-headed long windows and door.

Newcastle-under-Lyme, in Staffordshire exhibits an unusual type of fortification. A low embattled wall encloses a building with gabled roof, a central



Coins with Illustrations of Mediæval Architecture.

tower carries a banner and two soldiers, one armed with a battle-axe and the other blowing a horn. On the frieze below the battlements are three shields for Edmund, Earl of Cornwall, England, and Chester.

Another Newcastle, that upon Tyne, also has a castle on its seal with central round-arched door, diapered wall surfaces, and two shields of early shape on the tower. The seal of the Bailiffs of Norwich, in use from 1223 to 1403 (Fig. VII.), shows a very fair representation of the castle, in which the Norman characteristics of the central tower are plainly visible. This is apparently rather more true to the actual building than the majority of castles depicted on ancient seals. Northampton's XIIIth century seal has a single embattled tower with closed door, the walls and battlements ornamented with fourteen quarterfoils. The head of a knight is visible on the left; he holds a cross-bow and a banner. Rochester Castle and the River Medway appear on the seal of that city with a banner of England over the main entrance. The

Virgin and Child, enthroned on a castle with two flanking towers carrying weathercocks, form the principal figures in the seal of Salisbury. Two round turrets appear behind, each having a conical roof with cross and finial.

Scarborough has a castle of two stories; the door and two windows on ground-floor have round arches, and above are two quatrefoil openings. The sea with a ship of war is visible on one side, and the castellan's helmeted head appears above the battlements. The first town seal of Stafford, also used by the free grammar school, encloses within a carved and enriched sex-foil a triple-towered castle, with quatrefoiled windows, open doors, and portcullis half raised.

A castle of peculiar and elaborate design is shown on Taunton's seal (Fig. VIII.). In the centre is a house of two stories with flags on the roof, flanked by circular towers with finials of fleurs-de-lys, and outside these an embattled wall. The castle on the seal of Thetford in Norfolk is a fine building with a triple-towered keep, diapered walls, and two towers at the sides. On one stands a knight with sword and shield, and on the other the castle trumpeter performs the duty of his office. So famous a castle as that of Warwick would naturally be represented on the seal of the town, and accordingly we find a good example with a central keep of unusual form, side towers, between which are spires and cross-finials, and a doorway with a pointed arch, all enclosed within an embattled wall. On the keep is a shield charged with bearings taken from the coats of Beauchamp and Guy, Earl of Warwick. The city of Wells is indicated upon its seal by a bridge of three round arches carrying houses. Behind are five round-arched niches containing doors, and over them four towers. The reverse of this seal shows a fountain or well, in allusion to the name of the town.

Wigan in Lancashire has a church-like building of uncertain character, possibly intended for a town hall. It stands between two trees, and has a central spire with cross-finial. The very fine reverse of the seal of Winchelsea depicts a building of elaborate design, as will be seen from the illustration (Fig. IX.). The figures in the doorway, in the window over, and those in the three niches on the right (martyrdom of Becket) appear to have been deeply impressed by a separate part of the matrix, in order to get an effect of greater contrast.

The royal castle of Windsor, triple-towered and embattled, and flanked by royal shields, stands in the seal of that borough. The shields display the lions of England dimidiated with the lions and castles of Castile, in allusion to King Edward I. and Queen Eleanor of Castile—an interesting example of a now extinct heraldic practice.

The above complete our survey of XIIIth-century seals; those of the XIVth century are not so numerous, but include some very fine examples. The first common seal of Bristol (Fig. X.) has on the obverse an elaborately-designed and fortified building by the sea; on the reverse is depicted a one-masted ship passing behind a building on the left, from the top of which a watchman points out the way to the steersman. The legend refers to the secret quay belonging to the port, which is evidently indicated on the reverse of the seal. The seals of the mayoralty of this and later date show the ship sailing *out* of the secret quay, and this arrangement now forms part of the town arms. Ashburton in Devon contents itself with a view of its parish church with central spire, and the cross of St. Andrew to whom it was dedicated. At Cambridge are extant the seals of Clare Hall, Corpus Christi College, Gonville Hall, King's Hall, Pembroke Hall, and Trinity Hall, all of XIVth-century date, but they do not present any architectural features calling for special remark, except that in some cases the figure of the founder is shown holding a model of the building.

Conway Castle, that well-known Edwardian fortress (Fig. XI.), is represented on the provost's seal only by a triple-towered fortification on waves of the sea. On the reverse of the seal of Dover a similar castle appears as a background to the legend of St. Martin and the beggar. The manor of Havering-atte-Bower in Essex also has such a castle on its seal, the central tower domed and finished with a cross, side towers with pinnacles, and a portcullis in the round-arched doorway. The Castle of Pontefract, in which Richard II. is said to have been destroyed, is represented in the town seal as a building of the usual three-towered type standing on a mount, with pointed doorway and round-headed windows (Fig. XII.). The masonry, however, is of an ornamental character, with wide joints, and the device of an annulet impressed in the stone blocks of the walling.

Of seals executed in the XVth century about eight examples are sufficiently interesting to be noticed in detail. A bridge of six arches over the river Taw is shown on the seal of Barnstaple Bridge (Fig. XIII.), and another of four arches over the Torridge occurs on the corporation seal of Bideford, both in North Devon. Corfe Castle in Dorset possessed a very fine seal showing the castle with three towers, on each of which is an ostrich feather (Fig. XIV.). Below the half-raised portcullis appears a crow, the French word for which evidently suggests a pun on the name of the town. Framlingham in Suffolk also displays a triple-towered fortress, with square-headed doorways. On the seal of Helston in Cornwall St. Michael the Archangel is depicted standing on an embattled arcade between two embattled towers, octagonal on plan and with domed roofs. He is in the act of transfixing the head of a dragon with his spear, and carries a shield of the arms of England.

That delightful old Cinque Port, Rye, possesses an exceedingly quaint and interesting seal (Fig. XV.), on the reverse of which is shown the elevation of a church, probably intended for the parish church of St. Mary. The building has an embattled wall, a spire topped with a cross, two crocketed pinnacles, an arcaded clearstory, six pointed windows, and a cross on each gable. In the centre on a carved corbel the Virgin and Child stand in a canopied niche.

Of special interest is the seal of Shrewsbury (Fig. XVI.), dating from 1425, with a view of the town. A large church of cruciform plan with a tall spire, houses, and other churches, stand within the town fortifications, in which is a central gate, and two side gates leading to bridges over the Severn. The walls are decorated with three shields of arms displaying the lions of England, the Cross of St. George, and the three leopards' heads of Shrewsbury town. The seal of Wisbech in Cambridgeshire as used by Sir John Colvile, governor in 1409, displays a castle with a triple-towered keep and two side towers, the windows having a peculiar quatrefoiled shape.

NOTES.

Competition Juries.

THE result of Mr. Wills's motion at the meeting of the Institute on Monday, in favour of appointing a jury of three assessors instead of one, is that the subject is relegated to the consideration of the Competitions Committee, assisted by two or three additional members to be appointed (temporarily) by the Council *ad hoc*. Another proposal considered was that an assessor should have two junior members appointed with him, not to share responsibility in the judgment, but apparently to keep an eye on him and remind him if he overlooked anything. We are not sanguine as to either proposal. Mr. Wills proposed that the triple jury should be paid the same fee as the single assessor, dividing it equally. The assessing of a large competition, if honestly and systematically carried out, is no light business, and no competent person could be considered adequately repaid for it by one-third of the present rate of emolument; nor do we feel any confidence that the verdict of three, supposing they could agree, would in all cases be better and sounder than that of one. As to the other proposal, we should like to ask how many architects of any standing and eminence in the profession would care to undertake the duties of an assessor subject to the reminders of two younger men, who, it is proposed, though not voting on the decision, are to have power to write and complain of him to the Council if they think he is wrong? It would be an exceedingly undignified position, which no man who valued his self-respect would care to accept.

Light and Air.

AN interesting decision on the subject of the law of light was recently reported in the official reports, which disposes of what may be regarded as a doubt, though the moment it was analysed it was shown to have no foundation. The facts of Richardson *v.* Graham, which is a decision of the Court of Appeal, were briefly that the defendant was owner of a servient tenement and that the plaintiff was lessee of the dominant tenement with a prescriptive statutory right to the light. The freehold of the dominant tenement was conveyed to the owner of the servient tenement, and it was contended on his behalf that such conveyance—even without possession—extinguished the plaintiff's right. The Court, however, held that this contention

was wrong, being "inconsistent with reason, with good sense, with authority," for the right having been acquired by the person in possession of the dominant tenement, he could not be deprived of it by the mere fact that the freeholds of the two adjoining properties were centred in one person.

The Liability for Surveys.

THE case of Palmer *v.* Godwin & Co., in which heavy damages were recovered against a firm of estate agents and surveyors for negligence in making a report as to certain property on which it was proposed to advance money on mortgage, shows the necessity for the most extreme care when work of this kind is undertaken. It was admitted that the gentleman who made the survey and report was honest, but the judgment found that his report was inadequate. It is to be noted that he was only twenty-six when he made this survey, and it is probable that the mistakes made arose from inexperience. There is probably no work which requires greater judgment than the survey of property in order to arrive at its value for the purposes of a loan. Such an opinion must be based not only on a minute examination of the property, but on a kind of knowledge which only experience can give; and when persons who own property are seeking to borrow money, statements by them in regard to such property should be carefully weighed by competent experts.

The Powers of Water Companies.

IN the case the Attorney-General *v.* Frimley and Farnborough District Water Company the question was raised whether a water company who have acquired certain land and erected their undertaking upon it, in pursuance of their Parliamentary powers, can erect pumping-stations and works on additional land acquired by agreement also under their Parliamentary powers. The decision of the case involved a consideration of the various sections of the Act of Parliament, but the Court held that upon additional lands which the Act gave the company power to acquire by agreement they could not set up what would amount to a new and separate undertaking, but only subsidiary works or conveniences in connexion with the existing undertaking. Landowners whose property is compulsorily acquired by water companies will be well advised to consider the point raised in this case, and to see that the water companies' powers are limited by their Bills as regards pumping operations to a certain area.

The Hudson River Tunnels.

BY the opening of the first pair of tunnels beneath the Hudson River a great obstacle to traffic has been removed between New York and New Jersey. Instead of being dependent upon ferry boats for the daily journey to and from business, the many thousands who live in New Jersey now have direct means of access to the business quarter of New York. The saving of time is an important item, apart from the avoidance of unpleasantness and risk during the winter months and the prevalence of foggy weather. Through passengers from New York to the Southern and Western States will also appreciate the new route, whose convenience will be further increased when the tunnels have been connected up with the terminus of the Pennsylvania Railroad. Two other tunnels are already under construction by the Hudson and Manhattan Railroad Company, and two by the Pennsylvania Railroad Company for main line traffic, making a total of six tunnels beneath the Hudson River. Taking into account the subways opened and nearing completion under the East River and the two new bridges over the same waterway, it will be seen that the isolation of New York will soon become a thing of the past. One interesting point in connexion with the Hudson River tunnels is that the successful completion of the task is due to one of our own countrymen, Mr. Charles M. Jacobs, the chief engineer to the railway company.

The National Physical Laboratory.

THE main point for consideration by the committee appointed to inquire into the work of the National Physical Laboratory was the possibility that the mechanical, physical, and chemical tests undertaken might interfere unduly with private enterprise. From the report now published as a Parliamentary paper we gather that the committee regard this fear as exaggerated, although not entirely without foundation. In future commercial testing will be divided into "contractual" and "investigatory" testing, the former covering tests undertaken for the purpose of ascertaining whether materials are in accordance with specification, and the latter relating to the testing of substances apart from any question of contracts. The committee recommend—and we think very properly—that the laboratory should remain absolutely free with regard to investigatory testing, and that contractual testing should only be undertaken in cases where private testing establishments are unable to do what is wanted in an adequate manner. There is also something to be said in favour of the note added by Sir Andrew Noble and Sir J. Wolfe Barry to the effect that, after a period of ten years, the laboratory should be completely free—as in the case of the national laboratories of Germany—to exercise their discretion in accepting or refusing any description of testing work. This addendum, however, has not been accepted by the Treasury, whose approval to the recommendations of the majority fortunately settles the controversy which has been going on for the past year or two.

The Parker Building Fire, New York.

ACCORDING to the reports of experts, the Parker Building belonged to that class which can only be called fire-resisting as a matter of very inappropriate courtesy, and its destruction ought not to cast any discredit on genuine fire-resisting construction. One fatal defect in the floor systems was that no protection whatever had been provided for the flanges of the steel girders and joists. The consequence was that as the metal softened under the influence of heat the floors gave way and left an internal shaft encouraging the spread of fire from top to bottom of the building. The experts also point out as other grave defects that the lift shafts and stairways opened into every story, and that iron shutters of inferior character were employed for protecting only a few of the windows. These things are very wrong from the standpoint of fire-resisting design, but we are afraid that they are being perpetuated quite as much in this country as in the United States, even in the present enlightened age.

Electric Fuses.

IN the valuable paper read to the Institution of Electrical Engineers this week by Professor Schwartz and Mr. James on "Fuse Phenomena," many points are discussed which are of interest to all users of the electric light. The introduction into the house circuits of a little piece of lead or tin wire which by melting and so breaking the circuit prevents the current ever attaining a value which would be dangerous from the fire risk point of view was an invaluable device when low pressures of supply were universal. Now when the pressure is rarely less than 220 volts the little piece of fusible wire has to be confined by a suitable covering to prevent the scattering of molten particles when the fuse blows, and its length has to be sufficient to prevent an arc forming between the terminals and lasting sufficiently long to be a source of danger. The authors are to be commended for the careful distinction they have made between a disruptive spark and a disruptive arc. The former is practically harmless, the latter will sooner or later lead to trouble and must be prevented. We agree with the authors in thinking that fuse wires made of alloys are unsatisfactory, as they are uncertain in their action. On the other hand, some pure metals, zinc, for instance, burn in air at the temperature of disruption, and so may ignite combustible material in the vicinity. With enclosed fuses both flame and molten metal will issue from the ends unless the fuses are hermetically sealed. The photographs shown by the authors of fuses in the act of melting are most instructive. They show that globules of the molten metal are as a rule scattered to considerable distances. Their oscillograms show that the short circuit currents often attain very large values before the fuse melts. They also show that in general there is a very sudden rise of the pressure across the terminals of the fuse at the amount of blowing. It is conceivable that in certain circumstances this pressure could give a dangerous shock. In any case where it exists the fuse must blow with explosive violence, and in judging the merits of a fuse due weight ought to be attached to quietness of action. We think that in rating fuses hitherto due stress has not been laid on the pressure of the circuits in which they will be placed.

Milton's Cottage.

IN this year, the tercentenary of Milton's birth, it is not uninteresting to note that the only one of the several houses in which he is known to have lived still exists. That is the little cottage at Chalfont St. Giles, where he resided for a time when the Plague raged in London

in 1665. The house of his father at Horton in Buckinghamshire, where Milton lived from 1632 to 1638, and which is supposed to have stood opposite the church, was long ago burnt down. The long life of many rural cottages and their substantial character is well indicated by the fact that we can still visit Milton's cottage and find it in an excellent state of preservation. There are many like it in Buckinghamshire and Hertfordshire, and they are in marked contrast to numerous modern cottages which are neither so picturesque nor so substantial.

The National Competition Report.

THE Annual Report of the Examiners for the Board of Education in the National Competition of Pupils in our Schools of Art is, as usual, accompanied by a number of illustrations of the works which have received medals or commendation. These well-executed illustrations, reproduced from photographs, render the Report an interesting possession; and they show a very high average of artistic talent in the designing of decorative detail of various kinds—utensils and designs for textile fabrics especially. Architectural design, as usual, seems the weakest element in the work illustrated; the best thing that can be included under the heading of architectural design is the design for a wrought-iron chancel screen by Mr. Albert Halliday, of the Bradford School of Art; which, as far as we can judge by the small-scale illustration, is both original in character and suitable to the material and merits the gold medal awarded to it. The reason, perhaps, why architectural design has never flourished much in the art schools is that it requires a degree of constructional knowledge which the students do not seem to possess, and which possibly is considered to be outside the limits of art-school teaching. This is in fact what is suggested in the Report of the Examiners in Architecture (Messrs. J. Belcher, R. Blomfield, and E. S. Prior), who, while recognising an improvement in the general level of designs of this class, "regret to notice that drawings are still sent in which are quite unworthy of being submitted for National Competition, and which show no acquaintance with the rudiments of architecture. In other drawings the elevations are often satisfactory, but no adequate study has been given to plan and construction; and the examiners particularly call the attention of the schools to the necessity of providing, in designs, plans that would work in practice, and construction that would be adequate for its purpose." In short, the real achievements of the national schools of art seem to lie in figure drawing (not so good, however, this year as usual) and in decorative and applied art work: architecture they never seem to have got to the root of.

The "Peace Palace" Competition Designs.

WE have noticed in succession the contents of two or three of the portfolios in which Messrs. T. C. and E. C. Jack, of Edinburgh, have been issuing large and handsome illustrations of the principal designs submitted in the competition for the Peace Palace at the Hague. The eight parts of this publication are now complete, and are obtainable from Messrs. Jack in the form of a large bound volume, at the price of four guineas. Some of our readers may be glad to possess such a record of this historic competition, which includes designs that may afford matter in turn for the contending passions of admiration, study, amusement, and dismay.

An Index to Published Drawings.

THE Victoria and Albert Museum has issued what seems likely to be an exceedingly useful pamphlet, consisting of a topographical index to measured drawings of architecture which have appeared in the principal British architectural publications. By the word "topographical" is meant that the subjects are alphabetically catalogued under the names of the towns in which the buildings are situated. The publications indexed are not only the architectural journals sold to the general public, but the Sketch-books of architectural societies which have only a limited circulation among members, and are therefore less easy to come at and make acquaintance with. To architects or writers on architecture in want of illustrations of a special subject or of the architecture of a special district, such a catalogue may be of the greatest service. It is published at the nominal price of three-halfpence.

Royal Academy Lectures.

IN giving, in this issue, the report of the concluding lecture by Professor Blomfield on "The Grand Manner in Architecture," we wish to add a word of recognition of the high literary and critical character of this course of lectures, which we should have been very glad to print *in extenso* had other considerations permitted. We hope they will be published in full, with adequate illustrations. Professor Blomfield has done well to recall to us a great standard in architecture, which we are only too apt to lose sight of in this over-practical country and in the hurry of modern life.

ROYAL ACADEMY LECTURES.

IN his fourth and concluding lecture, delivered on Thursday last week, Professor Blomfield dealt with the grand manner in architecture as illustrated in France. For the grand manner was not the sole prerogative of the ancient world. It was to be found in modern architecture—in Durham and Lincoln and Beauvais; in the military architecture of the Middle Ages, as in the huge donjon of Couci, 145 ft. high with walls 22 ft. thick; the fragments of Château Gaillard; the gigantic escarpments of Chinon: but the effects arrived at in these cases were not so much the result of conscious artistic intention as of accident, or of extraneous motives.

No modern nation had ever approached the French in their capacity for handling large design; that is, the design of monumental buildings together with their placing in relation to other buildings. English architects, or perhaps it would be fairer to say the English public, had been satisfied if the building, whatever it was, was good in itself; the effect it might have on the surrounding buildings, or they might have on it, had not been considered, with the result that many admirable buildings lost half their quality; and with the exception of Bath, we had not in this country a single important city, or even a large part of one, laid out on a consecutive and dignified scheme, in which open spaces, street perspective, and the linking up of monuments, were assigned their proper place. To a well-trained Frenchman such a habit of mind would be inconceivable. The French passion for logical order and lucidity of statement asserted itself in their civic architecture in a manner worthy of the tradition of Imperial Rome. Nor was he referring only to such cities as Paris, with its splendid vistas, and its series of gardens and avenues from the Louvre to the Arc de Triomphe. The same consciousness of the full possibilities of design was to be found in French provincial towns. He would mention two instances in particular. One was the little town (originally a village) of Richelieu, the property of Cardinal Richelieu, and which he deliberately rebuilt as a small architecturally laid out town from the designs of his able architect Lemercier. Professor Blomfield gave a short description of the place, though a mere description could not convey any idea of the dignity of this design and the impression it produced of ordered simplicity. There was little or no ornament in the place; the whole effect was reached by fine selection, and the wise use of symmetry and repetition in the general design. He added, in connexion with the subject, that Lemercier was an architect whose work deserved careful study; and his work at Richelieu was of peculiar importance because it was perhaps the earliest example of those immense schemes of ground treatment to which French designers were to devote themselves for the next hundred years. The French revolutionised the ideas of the civilised world in regard to the designing of grounds, the laying out of great spaces in cities. Lemercier was a forerunner of the great school of Louis XIV.: Le Muet and F. Mansard were his contemporaries, and their immediate successors were such men as Hardouin Mansard—men who had the habit of dealing with great schemes of building; and specialists in ground design, such as Le Bouteux, Cottart, Le Blond, and others, whose fame was merged in that of André Le Notre, controller-general of the Royal buildings, arts and manufactories of France. Le Notre died in 1700; but he had established a standard and tradition of great design, which was accepted as a matter of course in every civilised country in Europe. It was reserved for our own country to replace this magnificent tradition with the ridiculous fancies of the landscape-gardener.

Thus in the middle of the XVIIIth century, French architects had definite principles to guide them in dealing with such problems of design as the laying-out of a city. What was most impressive in the French gardens of the time of Louis XIV. was not so much their details as their vast scale and the organic relationship of every part. The central idea was usually very simple. At Versailles the idea was that of an enormous vista leading up to the steps in front of the Palace, and flanked on either side by masses of trees within which were placed fountains, groups of sculpture, and other details, so arranged that they did not interfere with the general conception.

Down to the end of the XVIIth century, with the exception of Richelieu's memorable undertaking, these qualities found their scope mainly in the design of grounds and gardens. The next step was to treat houses and buildings as units of a comprehensive design; and during the first half of the XVIIIth century some very beautiful *Places* in the larger French cities were the result. The Place Vendôme was designed by Hardouin Mansard. The Place Royale at Bordeaux was built from the designs of the two Gabriels, 1733—1749. The Place du Palais at Rennes was completed in 1743 from designs by Gabriel, and the square at Reims before 1760. Designs for public squares in several other towns were prepared but not carried out. Nancy, however, stands alone among the great examples of city planning, in that not only is there a great square with its approaches

carefully studied, but this itself is only part of a much larger scheme.

Professor Blomfield then sketched the history of the development of the present architectural centre of Nancy, which in the early part of the XVIIIth century consisted of two towns, the Old and the New, the former within the fortifications, the latter without. The walls were demolished, as one of the conditions of the Peace of Ryswick, in 1697, and the Old and New Town left separated by a wide untidy space. The architectural laying-out of the city was inaugurated under the rule of Stanislaus Leczinsky, the ex-King of Poland, placed there in an honourable retirement, in 1737, by his son-in-law, Louis XV. His architect was Emanuel Héré, a native of Nancy, who in his treatment of the site showed an ability not inferior to that of any of the great French architects of the XVIIIth century. He cleared the waste space between the Old and New Town, and formed the great square, the Place Stanislaus, as the centre point of the united city. The whole of the south side is occupied by the Hotel de Ville, containing among other things a most remarkably designed staircase. On the east and west sides of the square are two blocks of buildings ranging with the Town Hall, but each designed as a separate block complete in itself. On the fourth side the buildings were kept down to a ground story surmounted by a balustrade. Instead of closing the four angles of the square he stopped his buildings short of the angles, and left it to Lamour, the artist in smith's work, to finish them with his grilles and gateways, leading to roadways at the south-east and south-west corners. It was the combination of Héré's architecture with Lamour's ironwork that made the Place Stanislaus unique in the world. A roadway, about 200 ft. long by 70 ft. wide, between the low buildings on either side, leads from the Place Stanislaus to the Arc de Triomphe, whence access is given to the carrière, a *place* some 900 ft. long by 190 ft. wide. The architectural treatment of this *place* was described at some length, and illustrated by a plan and some photographs of the buildings; the whole description and illustrations leaving the impression that Nancy ought to be a special place of pilgrimage for architects who are studying the laying out of towns and public squares.

In conclusion Professor Blomfield said: "In these lectures I have commented on examples taken from different ages and different countries. What is the common bond that unites them? I think it is to be found in an elevation of thought and imagination that rise superior to the entanglements of detail. Each of these works was the embodiment of an intellectual conception far-reaching in its range and unfaltering in its tenacity of purpose. This I hold to be the true interpretation of the Grand Manner in Art, and this is the ideal that we as architects, should hold before us. There are many short cuts in Art which will have their ephemeral success, and captivate the public for the time: clever plagiarism; intentional eccentricity; forcing the note; violence of expression; even ingenious advertisement; such are some of them, but these will have their day, they will go down into oblivion. And that work alone will stand the test of time which proceeds from a genuine inspiration and is a serious effort to realise a great ideal."

PUBLIC OFFICES BILL.—The measure which has been presented to the House of Commons on behalf of the Office of Works provides for a further extension of the Patent Office upon a site having frontages to Furnival-street (west side) and Took's-court, Holborn; for the erection, on the south side of George-street, of the building which will replace that of the Institution of Civil Engineers to be acquired under the Bill; and for the construction of an archway across Downing-street as a means of communication between the present offices in Parliament-street and the northern block in the former street.

BRITISH SCHOOL AT ROME.

THE second open meeting of the British School at Rome for the present season took place on February 28 in the Library of the School. Dr. Duncan Mackenzie (Honorary Associate of the School) read a paper (illustrated by lantern slides) upon the "Tombs of the Giants" in their relation to the nuraghi of Sardinia, giving the results of his investigations on this subject in the autumn of 1907, in the course of a journey which he made to the island on behalf of the British School of Rome, and in the latter part of which he was accompanied by the Director (Dr. T. Ashby).

He first explored the neighbourhood of Sorgono, a town over 2,000 ft. above sea-level, in the centre of the island. Here he found no less than four instances in which a nuraghe and a "tomb of the giants" were in such close juxtaposition to one another, the latter being always visible from the former, as to suggest a connexion between the two. In one instance, indeed, the nuraghe and the tomb were only 40 yds. apart, upon the same knoll, with no other ancient monuments in the vicinity. It seemed clear, then, that in each case the nuraghe (a massive circular structure of large unhewn blocks, with a circular chamber or chambers in the interior) was the fortified habitation, and the "tomb of the giants" the family tomb. The latter acquired its popular name, no doubt, from its form—a *cella* varying in length from 6 yds. to 12 yds., or even 18 yds., and 3 ft. to 3½ ft. in height and width, which was supposed to have contained a single gigantic corpse, but, as a fact, served for the burial of a number of bodies, placed transversely in the traditional squatting posture inherited from the primitive burial rite of the dolmens. In front of the *cella* there was often (though in many cases it has been destroyed) a large upright slab, generally round-topped, with a small rectangular aperture in it, and on each side of this front a curving line of stonework extends, the two arms enclosing a semicircular area.

Architecturally, too, the "tombs of the giants" were the successors of the dolmens, for, in the more primitive form, the sides of the *cella* and the frontal semicircle are composed of upright slabs, sometimes slightly inclined towards one another in the *cella*, which is roofed with flat slabs like a dolmen; while, in the later type, ashlar masonry (the upper courses of which, in the *cella*, are inclined towards one another) is substituted—an innovation derived, no doubt, from the architecture of the nuraghi. Like the nuraghi, the "tombs of the giants" are, as a rule, orientated to the south, or, more precisely, a little east of south. A further characteristic of the "tombs of the giants" is the enclosing wall, which includes the whole of the *cella*, running parallel to its side walls, and bending round the back of it in an apselike curve, and the exterior of the frontal semicircle. It must be regarded as a retaining wall, which supported the mound of earth by which the whole tomb was originally covered. In some cases this mound still exists, but more often the slabs have been exposed; and in every case the tomb chamber had been ransacked by treasure-seekers.

After the neighbourhood of Sorgono had been carefully studied, operations were transferred to the equally lofty district of Lanusei, near the east coast of the island, where three more instances of this juxtaposition of nuraghe and "giants' tomb" were noticed. In two of these the nuraghe was not isolated, but formed the point from which started a wall of circumvallation; within the area thus enclosed were the foundations of a few circular buildings, no doubt small huts of a type of construction similar to that of the nuraghe itself, though less massive. They were especially well preserved at Su Chiai, to the north of Lanusei, not far from Villagrande, and the "giants' tomb" in this instance was also a fine one, showing with especial clearness a peculiarity sometimes noticed in other cases also—the existence of a line of rough masonry between the side wall of the *cella* and the enclosing wall on each side, meant no doubt to give greater solidity to the whole. In this case it was especially noticeable that there was a contrast between the naturally strong and commanding position chosen for the nuraghe and the lower and more secluded position selected for the tomb, which may be observed in other cases also.

Only one tomb was, however, to be found, and the question as to what and where were the burial-places of the inhabitants of the smaller dwellings which lay under the shadow of the great nuraghe could not be answered. There is indeed no case of a necropolis of "giants' tombs" in Sardinia; they are always found at some distance from one another.

Bad weather in the mountains was the occasion of another transference of operations to the neighbourhood of Iglesias, in the south-west corner of the island. Here, under the guidance of Cavaliere J. Sanfilippo, the local inspector of antiquities, the site of Serucci, near Gonnesa, was visited. It was (a wide terrace) commanded by a large mound, the remains of a considerable but much ruined nuraghe, to the west of which stretched the ruins of what was once a nuraghe town. Perhaps a hundred circular huts could be traced, only one of them with its doorway still preserved and with the lintel still in position; its internal diameter was 22 ft. Many of the others appeared at first sight mere heaps of stone, but a more careful scrutiny revealed the remains of their walls, or at least their circular outline; in many cases two or three would be joined together, the intervening spaces serving as courtyards.

Below the town is a low-lying meadow, after which the ground rises steeply again; upon the crest of the hill, in full view of the nuraghe, is a "giants' tomb," the family tomb, no doubt, of its inhabitants, but the only one to be seen in the neighbourhood, and entirely isolated. What, then, were the burial-places of the dwellers in the smaller huts is not as yet clear, but the conclusion is irresistible, that they were of a different and in all probability of a simpler character.

A final visit by Dr. Mackenzie to two giants' tombs in the neighbourhood of Borore, in the centre of the island, only confirmed his former conclusions, both being in the immediate vicinity of nuraghi. The whole investigation rendered it more than ever impossible to accept Pinza's conclusion (*Monumenti dei Lincei*, vol. xi., part 1) that the nuraghi were themselves tombs. For then there would have been two kinds of monumental burials existing side by side, and proved to belong to the same period by the objects found in them, without any corresponding habitations.

After some remarks upon the subject of the paper had been made by the Rev. Father P. P. Mackey, O.P., who had himself explored a considerable part of Sardinia, the Director closed the proceedings by expressing a hope that the British School at Rome might in time be able to extend its investigations to the prehistoric monuments of the whole of the Western Mediterranean, carrying out the same sort of work as British scholars have so successfully done in the Aegean, and by this comparative study of early civilisations be able to bring out interesting parallelisms with the earliest monuments of the British Isles.

PROPOSED STREET IMPROVEMENTS, ETC., PAIGNTON.—An application of the Paignton District Council for sanction to borrow 1,994*l.* for sewerage works and road improvements was the subject of a recent Local Government Board inquiry. The larger portion of the sum was stated by the Clerk to be a loan for 1,191*l.* for widening and laying a sewer in Cliff-road, which, it was explained by the Surveyor, Mr. C. O. Baines, it was proposed to widen to 36 ft.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A SPECIAL general meeting of the Royal Institute of British Architects was held on Monday evening. The chair was taken by the President (Mr. T. E. Collcutt).

The Chairman moved, "That, subject to His Majesty's gracious sanction, the Royal Gold Medal for the promotion of Architecture be presented this year to M. Honoré Daumet, Member of the Institute of France." The motion was carried with acclamation.

The ninth general meeting (business) of the session 1907-1908 was then held, and the following new members were elected:—

As Fellows.

H. M. Fletcher, M.A. Cantab., L. K. Hall, E. Mansell (Birmingham), G. Pinkerton, C. H. B. Quennell, T. R. Richards, W. G. Rowan (Glasgow), M. M. Smith, B.A. Cantab., W. B. White (Glasgow).

As Associates.

A. H. Brownrigg, W. T. Clarke (Liverpool), V. Constable (Glasgow), H. R. Crabb (Birmingham), J. B. Cubey (Newcastle-on-Tyne), F. Donaldson (Bishop Auckland), J. W. Farmer, G. H. B. Gould (Ipswich), P. K. Hanton, E. H. W. Harlock, J. A. Harrisson (Liverpool), A. J. Healey, H. L. Hicks (Newcastle-on-Tyne), F. H. Jones (Buenos Aires), A. S. Millar, C. P. Moss, S. M. Mould (Newcastle-on-Tyne), A. Pearson, C. R. Pinsent, A. Pursglove (Manchester), W. A. Ritchie-Fallon, M. E. Stahl (Weston-super-Mare), L. S. Sullivan, J. H. Taylor, G. M. Trench, C. Trevithick (Auckland, N.Z.), P. F. Warren (Wrexham), R. Welch, G. B. Wills, C. Woodward, E. L. Wren.

As Hon. Associates.

T. Brock, R.A., W. J. Locke, B.A. Cantab.

Mr. Herbert W. Wills moved, and Mr. A. W. S. Cross seconded, the following resolutions:—

"1. That for all competitions for buildings of 15,000*l.* and upwards a jury of three assessors be appointed.

2. That the fees paid to such assessors be the same in total amount as the fee hitherto paid to one assessor."

On the proposition to refer the question to the Competitions Committee to consider and report to the Council, the resolutions were withdrawn.

THE ARCHITECTURAL ASSOCIATION.

THE following is that part of Mr. Edward Warren's paper on "Oxford" which, for want of space, we were unable to print last week:—

Christ Church.

Christ Church, the largest College in Oxford, has not only that distinction, but many others. It has a cathedral for its college chapel, and was founded in 1525 by Cardinal Wolsey as Cardinal College, and on the splendid scale which characterised that Prelate's undertakings. Christ Church Hall is approximately the largest in Oxford, and is a magnificent room, measuring 115 ft. by 40 ft. and 50 ft. high. It was completed in 1529. Panelled up to the window sills, it is roofed with a fine hammer beam roof, said to be of Irish oak, with unusually long pendants. The hall forms the southern side of the great quadrangle, 264 ft. by 261 ft., familiarly called Tom Quad, from the bell "Great Tom," which hangs in Wren's belfry over the central gate, and which came from Osney Abbey, but was recast in 1680, and weighs some 18,000 lb. The splendid long, low Tudor Gothic western front that lines the gentle slope of St. Aldate's-street, with its battlements and serried windows, its high plinths, and octagonal angle turrets, and its stately central tower with pinnacled flanking turrets, is as fine a thing of its kind as one need wish to see, and the admirable harmony of Wren's domed belfry of 1682, with the Tudor gateway below, is a striking instance of the genius of that great man. This gateway was formerly known as "The Faire Gate," and Wolsey's statue stands over the arch. The staircase leading to the hall is ceiled with an elaborate fan-traceried vault, carried on a slender central shaft added by Smith under Dr. Fell in 1640, and an amazing instance of complicated Gothic work accomplished about one hundred years out of date.

The Classic quadrangle of Peckwater, 1705, said to have been designed by Dean Aldrich himself, occupies the site of Peckwater Inn. The south side is formed by the library, which, later than the rest, was finished about 1761.

Canterbury Quadrangle, named after the old demolished Canterbury College, a XIVth century foundation, was built, or rebuilt, the north and east sides in 1775, the south in 1783, and the gateway by Wyatt in 1778.

Jesus College.

The first College founded since the Reformation, the date of its Charter being 1571, was destined by its founder, Dr. Hugh Ap Rice, or Price, as a College for Welsh students. It still remains intensely Welsh and has a distinguished Welsh Principal. It has been restored and modernised, but was mostly built in the late Gothic manner peculiar to Oxford. The hall, an interesting plaster-ceiled room with good woodwork, dates from about 1620, the chapel a year or so later, but the latter was enlarged in 1636. The library was rebuilt about 1677. The hall contains some excellent portraits.

Exeter College.

Exeter College, first founded at Stapledon Hall in 1314, by Walter de Stapledon, Bishop of Exeter, was practically refounded by Sir William Petre, the father of Dorothy Wadham.

Very little, unfortunately, of the oldest—or indeed of any really old—buildings remain to-day, the earliest being portions of the old tower gateway, now forming part of the Rector's lodgings. The hall, a large and handsome one, was built in 1618, but twice or thrice restored. The chapel, built in 1623, was pulled down to build the present incongruous imitation of the Sainte Chapelle at Paris, by Sir Gilbert Scott. It contains the tapestry of the Adoration of the Magi, designed by Burne-Jones, and carried out by William Morris, both distinguished members of Exeter. The Fellows' garden and the Rectors' are delightful, if small, and give fine views of the surrounding buildings.

St. John's College.

St. John's College, originally a house of Bernardine monks, was converted by Archbishop Chichele into the College of St. Bernard in 1436, a year before the foundation of All Souls'.

St. John's is not only one of the most beautiful Colleges of Oxford, but has the most beautiful garden of that city of gardens. The College was made over to Christ Church by Henry VIII., but conveyed by that Society in 1555 to Sir Thomas White, of Rickmansworth, a clothier and alderman of London, who refounded it as the College of St. John the Baptist. The old part of the College consists of two fine quadrangles. Parts of the first, the south and west sides, are portions of the older foundation, but the north portion of the front to the road (St. Giles's), and known as Cook's-buildings, was built in 1613 and enlarged in 1628. Entering the first quadrangle, the hall, the old Bernardine refectory Georgianised, is on the left, and contains portraits of Laud (sometime President of the College), Juxon, Sir Walter Raleigh, and George III. Below the hall are XVth century cellars; east of the hall is the small chapel, consecrated in 1530. The President's lodgings separate the first quadrangle from the second or "Canterbury" Quadrangle, and contain panelling tapestry and some old portraits, amongst them Charles I. and Mary Queen of Scots.

It is to Laud and his unknown architect that are due the buildings of the Canterbury Quadrangle, with their fine colonnades, and the beautiful east or garden front, with its long, low lines and oriel windows, vaulted passages, and charming gates and doorways. There is, to my thinking, hardly a lovelier thing in Oxford, or in England. The splendid library, which is full of treasures, amongst them many of Laud's vestments, consists of two fine rooms, in which Charles I. and Henrietta Maria were entertained in 1636. Bronze statues of these royal guests by Hubert le Seuer occupy niches over the west side of the archway to the gardens. The Common-room of St. John's is a stately chamber built in 1676, and panelled in oak in the large bolection moulded panelling of that time; it possesses some very handsome silver candle sconces on its walls.

Wadham College.

Wadham College was founded by Nicholas Wadham and his wife Dorothy, on the site of an old Augustinian Priory. The buildings began in 1610 and were finished in 1613. This College is the least altered and most homogeneous at Oxford, and presents another and most interesting instance of the architectural conservatism of which I have spoken. It is very regular in plan, and its street front is absolutely symmetrical, and an excellent piece of careful proportioning. The plan and this studied symmetry of design show the influence of the Renaissance, but all the detail is practically of late Gothic. The chapel, which is extremely dignified and interesting, has pointed "perpendicular" windows of startlingly early type for this date. The hall is very fine, 83 ft. long by 35 ft. wide. It has a fine hammer beam roof, and an excessively picturesque screen with pierced and scrolled pediments. Over its entrance are statues of Nicholas Wadham and Dorothy his wife, as well as one of James I. The gardens, still in part bounded by portions of the old Priory walls, were replanned and laid out by Dr. Wills, Warden of the College, between 1783 and 1806, and the old formal gardens which appear in Loggan's view, is thus, alas! lost to us. Wadham has produced many eminent men. Admiral Blake and Sir Christopher Wren were both members, and there is no more loyal or devoted son of Wadham than Mr. T. G. Jackson, R.A., whose admirable and interesting monograph of his College I commend to your notice.

Trinity College.

Trinity College, which occupies the site of Durham College, an ancient Benedictine house, part of which it retains in an altered form as its library, was founded in 1554 by Sir Thomas Pope, of Tittenhanger, Herts, Privy Councillor to Henry VIII. It is notable especially for the magnificence of its gates, both those in Broad-street and of the gardens in the rear. The chapel, built from designs by Dean Aldrich and finished in 1694, is externally commanding, and is connected with the western range of the College by a strangely picturesque tower, surmounted by an open parapet and pedestals, bearing rather exuberant statues of great size. The interior of the chapel is most dignified and impressive. Its panelling in cedar is pleasant to sight and smell. The altar piece is adorned by magnificent carvings by Grinling Gibbons in pear wood. The recumbent effigies of Sir T. Pope and his wife are curiously enclosed in a glazed cupboard on the north side of the sanctuary. In the small quadrangle north of the chapel is a small Gothic building said to be the earliest College library in Oxford. The hall is a delightful, sober, plaster-ceiled room, with a good screen, and contains some fine Swiss glass in the bay windows that lights the dais; over the centre of the latter hangs a charming portrait of Lady Pope. The north wing of the garden quadrangle was designed by Wren 1665—1667, the west front 1682, the south wing 1728.

University College.

University College, suporbly placed in High-street, and actually built in troublous times, between 1634 and 1675, is of very old

foundation. Its first historical endowment dates from 1249, and it owes its name to the fact that the funds bestowed by William of Durham were placed in the hands of the University as trustee. Known first as University Hall, as testified by a petition in Norman-French addressed to Richard II., it acquired its present site, according to Professor Freeman, early in the XIVth century, and was then known as "Great" or "Mickle University Hall." In the next century it became known by its present title. Not content with its acknowledged antiquity, however, it preserves the tradition of a mythical foundation by Alfred the Great. Its picturesque street front, with its odd gables and typical Oxford square gate tower, is striking rather than architecturally admirable, and the same may be said of its two sober quadrangles. The chapel, like that of Trinity, is panelled in cedar, but its screen is of oak. It contains some painted glass of 1641 by Van Linge the younger.

Oriel College.

Oriel College was founded as St. Mary's College by Adam de Brome, in a house in the High-street. It was also known as King's College, or Aula Regalis, from its patron and visitor Edward II. It is said to owe its present name (attributed by the unthinking to its oriel window) to the plot of land on which it stands, and which was known as *la Oriole*. Hardly anything of the original buildings remain. The front quadrangle was rebuilt between 1619 and 1642. Its curious ogeed gablets give an odd and characteristic effect to the front quadrangle. The Garden Quadrangle is much later, and dates from 1719 to the early XIXth century. St. Mary's Hall has been absorbed by Oriel, and its dining hall is now the Junior Common-room.

St. Edmund's Hall.

St. Edmund's Hall, founded in 1226 by St. Edmund le Rich, of Abingdon, was refounded in 1559. The existing buildings date from the late XVIIth century and upwards. It is a College in miniature, and its little front quadrangle is well worth inspection.

Queen's College.

Queen's College, proudly standing like its neighbour, University College, upon the High-street, of which it forms one of the most striking features, is a much older College than it looks. It was named in honour of Queen Philippa, wife of Edward III., and founded in 1340 by Robert de Eglesfield, Chaplain to that Queen.

Loggan's view of Queen's College shows a picturesque congeries of Gothic and early XVIIth century buildings, all of which, indeed all of Eglesfield's work, has been swept away. The College as it stands is of the late XVIIth and early XVIIIth centuries. The imposing street front, with its central gateway crowned by the unstable looking, umbrella-like cupola that protects the statue of Queen Caroline, and the high flanking gables, rising above the rusticated ground story, dates from 1750—1756, and is the work of Hawkesmoor, who had also designed the front quadrangle and colonnades, 1710, following his master Sir Christopher Wren, who had built the fine hall, 1704-14, the beautiful little chapel with its round apse, 1714-19, and the stately library which overlooks the garden. Queen's is the most determinedly Classic of the Colleges, handsome, interesting, and deserving much longer notice and ampler illustrations than I can give it.

Pembroke College.

Of Pembroke College there is not, alas, much to say architecturally. It has been rebuilt and 'restored' out of all semblance to its former self, and is almost a modern College as far as its buildings are concerned. It was founded in 1624, on the site of an old hall called Broadgates Hall, by Thomas Tesdale and Richard Wightwich, and was named after the then Chancellor William Herbert, Earl of Pembroke. The only remaining part of Broadgates Hall is the refectory, now used as a library. The dining hall, by Hayward, 1848, is not bad as a specimen of modern Gothic. The real distinction of Pembroke is that it was the College of Dr. Johnson.

Worcester College.

Worcester College stands, so to speak, out in the cold, away from its fellows, on low ground near the Isis, and replaces the ancient foundation of Gloucester Hall, founded in 1283 for monks from the Benedictine Monastery at Gloucester by John Giffard. On the suppression of the monasteries, the hall was transferred to the newly-created See of Oxford by Henry VIII., but passed in Elizabeth's reign to William Dodington, who sold it to Sir Thomas White, who reopened it in 1561 as St. John the Baptist Hall. In 1642 the trustees of Sir Thomas Cooke brought it, and refounded it as Worcester College in 1714. The College buildings are chiefly of the XVIIIth century, and good examples of their periods. The north side of the quadrangle, which was intended to be completed, a southern side similar to the north, as well as the hall library and chapel, which, with their projecting wings from the street front, were built at various dates between 1753 and 1784. In October of last year a portion of the heavy cornice on the north side of the chapel collapsed. On the site of the projected south wing still stand a row of picturesque little mediæval buildings, chiefly of the XIVth century, which formed the hostels of the Benedictines. Over the doors are shields bearing, one (according to Mr. Massé) the Griffin of Malmesbury, another the cross of Norwich, while over a third door is the Rebus of Compton, a comb and a tun. The chapel was decorated by Burges, 1864-70, and contains an elaborate alabaster lectern. Some low buildings north of the chapel, and fronting the Fellows' Garden, are the remains of Gloucester Hall, whose four-centred gateway arch still exists. Worcester College looks westward over the country, has delightful gardens, and glories in the possession of a lake and swans.

Hertford College.

Hertford College, like Pembroke, is practically all modern. It was founded as Hart or Hertford Hall in 1284 by Elias de Hertford. It has had a checkered career, and was dissolved in 1805. After old Magdalen Hall was burned down in 1820, the foundation was removed to Hertford, which was rebuilt in 1820-22, by Mr. Garbett, and renamed Magdalen Hall. In 1874, by Act of Parliament, it was restored to its old name of Hertford College, and in 1889 Mr. T. G. Jackson united the two blocks of 1822 by a clever arrangement of a central block with an entrance gateway.

Of Keble College, the only really modern College, I have not time to speak, and indeed I have, as you see, avoided dealing, except incidentally, with modern buildings.

UNIVERSITY BUILDINGS.

Time allows only of the shortest and most inadequate descriptions of the buildings pertaining to the University.

Divinity School.

The Divinity School was begun in 1445, and was completed, with the library over it, by Humphrey, Duke of Gloucester, in 1480. It is a curious hall, with ungainly four-centred arches dividing and supporting its unpleasingly elaborate fan-vaulted roof. It has, however, the beauty derived from effects of light admitted by the great windows.

Convocation House.

Built by the University, under Laud, 1640, with rooms over it for Duke Humphrey's library.

Bodleian Library.

It is impossible to describe the Bodleian Library hurriedly. Duke Humphrey's library over the Divinity School forms the most ancient part of it. Sir Thomas Bodley (an ancestor of the late Mr. G. F. Bodley) refitted and restored the old buildings, and between 1610 and 1612 added the east wing. The massive painted roofs, the niched busts, the projecting bookcases, with their intermediate pens for study, the wooden gates, the pierced plate iron grilles, the old windows with their fragments of painted glass, all go to make up a sum of picturesqueness which is beyond description.

The Old Schools.

The quadrangle of the Old Schools was built in 1439, and rebuilt 1613-18.

Tower of Five Orders.

The Schools Tower of Five Orders is an essentially Gothic tower with the pseudo-Classic details superadded.

Sheldonian Theatre.

The Sheldonian Theatre was designed by Wren and built 1664-69 for Archbishop Sheldon, the Chancellor of the University. Its design is said to have been suggested by the Theatre of Marcellas at Rome. It is admirably lit by its upper tier of windows, and is so well arranged as to hold nearly 4,000 people. The ceiling, which imitates canvas canopy stretched on gilded cords, was painted by Robert Streaton, sergeant painter to Charles I., and represents an apotheosis of the Arts and Sciences. The loft over it and the roofs are wonderful pieces of carpentry. The singular row of piers with gigantic heads, supporting the railings outside, gives rise to endless conjecture.

The Old Ashmolean Museum.

The old Ashmolean Museum is often attributed to Wren, but is probably the work of Thomas Wood. It was built between 1679 and 1683.

Radcliffe Camera.

The Radcliffe Camera, whose dome is such a distinctive feature of Oxford in almost every distant view, is a building of which even Rome might be proud; shapely, proportionate, and massive, it is a superb monument to its architect, James Gibbs. It was finished in 1747, and was built at the cost of Dr. John Radcliffe, physician to William III. and Mary, and to Queen Anne, who contributed 40,000*l.* for purchase of the site and erection of the building. Splendidly built, paved, roofed, fitted, and furnished, it is admirably planned as a rotunda of some 100 ft. in diameter, having a vaulted basement, and two superposed galleries for use as libraries.

CHURCHES.

The Cathedral.

The Cathedral Church of Christ, formerly the Church of St. Frideswide, and containing her shrine, became a cathedral in 1546. The church was rebuilt by the Normans, and the nave was probably completed about 1190. The Lady Chapel altered and vaulted by 1289. The spire and the chapter house, which has a fine Norman doorway, are of early English work. The Latin Chapel, on the north side of the choir, is of the XIVth century. The clearstory dates from the late XVth century, as also probably does the elaborate fan-vaulted roof. The organ screen and pulpit dates from 1635.

The cathedral, and particularly the Latin Chapel, contains some XIVth century glass, and also extremely interesting glass by Morris and Burne-Jones, as well as one pleasant old window at the west end of the north aisle, by Van Linge.

St. Mary the Virgin.

The University Church and also a parish church. The fine tower dates from the XIIIth century, with XIVth century (1310) additions, the spire being of typical decorated work, but very much 'restored.' The nave was rebuilt from 1490 to 1503, and 'restored' early in the last century. The classical south porch, with its united columns, was added by Dr. Morgan Owen in 1637. The Lady Chapel, or Adam de Brome's Chapel, contains the tomb of the Founder of Oriel. The chapel was built in 1320, but subsequently altered and perpendicular windows

inserted. On the north side is the old Congregation House, a two-storied building, separate from the church, and now containing the old statues removed from the tower. The upper room was the original library of the University. Before the building of the Sheldonian Theatre the church was used for all sorts of University business and meetings.

All Saints' Church.

All Saints' Church succeeds the ancient church of All Hallowes, destroyed in 1699 by the fall of the spire, and was designed by Dean Aldrich and finished in 1708. It is a typical early XVIIIth century building, and had side galleries, now removed. It contains a fine tomb and recumbent effigy of Alderman Levins, and a beautiful XVth century font removed from the former church.

DOMESTIC BUILDINGS.

Oxford contains many and charming old houses of which I can only give you one or two instances.

Black Hall.

Black Hall, in St. Giles's, is shown in early maps, and is apparently a XVIth century house altered in the XVIIth and added to in the early XIXth century. Its high narrow front and long south flank with dormers are very pleasing. It contains a fine, massive, big-balustered staircase.

Bishop King's Palace.

Bishop King's Palace, in Rose-place, is a fine Jacobean house with seven gables on its northern side, and many overhanging wooden mullioned windows supported on carved brackets. It bears the date 1628, but is probably an older house altered at that date.

Approximate Chronological Order of Buildings from the Norman Conquest to 1800.

(Taken from *Oxford* by H. J. L. J. Massé, M.A.)

SAXON WORK.

The wall at the east end of the choir in the cathedral. Possibly in the westernmost portion of the crypt at St. Peter's-in-the-East.

NORMAN.

The remaining tower in the Castle, 1071. The tower of St. Michael at the north gate, part, 1074; part later, 1150. Chancel arch in Holywell Church, 1160. Door of Chapter House in Cathedral Cloister (damaged by fire in 1190). St. Giles's Church, base of tower, 1138. The nave of the Cathedral (1140—1180). Clearstory in transept, 1180. Crypt of St. Peter's-in-the-East, part of the chancel, south doorway, corbel table, 1170.

(Iffley Church, with its recessed arched, zig-zag, and other mouldings, c. 1160, should be visited by every student of English architecture.)

TRANSITIONAL.

Original north and south aisles of St. Mary Magdalen, c. 1194. St. Giles's (very late, 1200).

EARLY ENGLISH.

The well-chamber in the mound in the County Gaol precincts.

St. Giles's Church.—South aisle, 1260.

Arcade in nave of St. Peter's-in-the-East, c. 1260.

The Cathedral.—Spire.

Chapter House (1220).

Lady Chapel (to the north of the choir). Existing fragments of St. Frideswide's Shrine, 1289.

St. Mary the Virgin Church.—The tower, 1280—1290.

DECORATED.

Merton.—Chapel, 1277. Hall (the original), 1274. Ironwork on door, 1320. Library 1376 (Bishop Rede).

St. Mary-le-Virgin.—The spire completed, 1310.

Adam de Brome's Chapel, 1320.

Cathedral.—Latin Chapel, 1350.

St. Aldate's.—South aisle, 1336.

St. Mary Magdalene's Church.—Original parapet on south front, 1335.

St. Peter's-in-the-East.—North aisle windows, 1350.

PERPENDICULAR.

New College, 1379—1386.—Chapel, 1386; hall, 1386; cloisters, 1400; bell tower, 1400; quadrangle, third story added, 1674.

Merton.—Ante-chapel, 1330—1414.

Balliol.—Old library, 1430.

Merton.—Entrance gateway, 1416; tower completed, 1424—1450 (Bishop Kempe ?).

Lincoln.—Tower; front quadrangle, 1431; hall, 1436.

All Souls.—College, 1437; chapel, 1442.

Divinity School, 1445—1480.—Slightly altered, 1669 (Sir C. Wren); panelled buttresses, 1450.

Old Schools.—Built originally, 1439.

Cathedral.—Vaulting of choir, 1480 *et seq.*

St. Mary the Virgin.—Nave, 1490—1503 (Sir R. Bray). The windows in the north side of Adam de Brome's Chapel, 1510.

Brasenose.—Buildings begun, 1509. Third story added to front quadrangle about a century later.

St. Mary Magdalen's Church.—Tower completed, 1530.

Magdalen, 1475—1481.—Founder's Quadrangle; cloisters, 1473; chapel, 1480; chapel tower, 1492—1505.

Corpus Christi, 1513.—Hall finished, 1516; chapel, 1517.

Christ Church. Part of the Great (Tom) Quadrangle; hall, 1528—1530.

JACOBEAN.

Jesus College, 1621—1626.—Chapel, 1621.

St. John's.—Cook's-buildings, 1613; enlarged, 1638.

Merton. Dormer windows in Mob Quadrangle, 1603—1625; Fellow's Quadrangle, 1608—1610.

Wadham, 1610—1613.

Bodley's Library.—East wing, 1610—1613 (Holt).

Trinity.—The hall, 1618—1620.

Botanical Gardens.—Entrance gateway, 1632 (Inigo Jones).

Schools Quadrangle.—Rebuilt, 1613—1618; Convocation House, 1634—1639 (Laud).

St. Mary's Church.—Porch, 1637.

Lincoln.—The chapel consecrated, 1631.

University, 1634—1675.—First quadrangle, 1634; chapel, 1639—1665; hall, 1640—1657.

Oriel Chapel (rebuilt).—South and west sides of quadrangle, 1620; hall, 1637; chapel, 1640—1642.

Christ Church.—Vaulting over the staircase to the hall, 1640 (Smith).

St. Mary Hall.—Hall, 1632—1644*; chapel 1640.

Brasenose.—Library, 1663 (Sir C. Wren); chapel 1668 (Sir C. Wren).

St. John's.—Laud's Quadrangle, 1661-1635; library (addition by Laud), 1631 (often attributed to Inigo Jones).

St. Mary's Church.—South porch, 1637.

Sheldonian Theatre (Italian), 1664—1669 (Sir C. Wren).

Trinity.—North Wing of the Garden Quadrangle, 1665 (Sir C. Wren).

Christ Church.—Completion of Great Quadrangle, 1665.

New College.—Garden Quadrangle finished, 1684.

St. Edmund Hall.—Chapel and library, 1680—1682.

Ashmolean (*Old*) *Museum*, 1679—1683 (Thos. Wood, sometimes attributed to C. Wren).

Christ Church.—Tom Tower (upper portion of), 1682-1684 (Sir C. Wren).

Trinity.—Chapel, 1691—1694 (Dean Aldrich and Sir C. Wren).

All Saints' Church, 1700—1708 (Dean Aldrich), 1713.

Corpus Christi College.—Turner's-buildings, 1706 (Dean Aldrich ?).

Oriel.—Garden Quadrangle, east side, 1719; west side, 1730.

Clarendon Building (Vanbrugh ? Hawksmoor).

Queen's College.—Front, in High-street, 1750—1756 (Wren ?); front quadrangle, 1710 (Hawksmoor); chapel, 1714—1719; hall, 1704—1714 (Sir C. Wren).

Christ Church.—Peckwater Quadrangle, 1705 (Dean Aldrich); library, 1716—1761 (Dr. G. Clerke).

All Souls.—The Twin Towers, 1720 (Hawkesmoor); Codrington Library, 1720—1760; hall and buttery, 1729 (Dr. Clarke); cloister, 1734.

Radcliffe Library.—1737—1749 (J. Gibbs).

Magdalen New Buildings, 1733—1735 (Holdsworth).

Worcester.—Chapel and hall, 1784; front, 1760; new buildings, north side of quadrangle, 1753—1773.

Christ Church.—Canterbury Gate, 1778 (Wyatt); Canterbury Quadrangle, 1775—1783; staircase to hall altered (Wyatt).

Oriel.—Library, 1788 (Wyatt).

Lincoln.—New Buildings in the "Grove," 1759.

Merton.—Hall ruined, 1800 (Wyatt).

The lecturer showed a large number of lantern slides of Oxford and its buildings during the evening.

* Now a Junior Common Room for Oriel College.

The Chairman said they had to thank Mr. Warren for his excellent paper that evening, and he intended to alter the general order of their proceedings by proposing a hearty vote of thanks himself. He would call upon Dr. Bell to second it.

Dr. Bell said he had much pleasure in doing so. It was a great delight to him to find that the repair of the serious damage which occurred at Worcester College owing to the faulty construction of the cornice which went all round the building—damage which was a serious financial burden—was in the hands of Mr. Warren. He did not know how many members of the Association had a personal acquaintance with Oxford, or whether it was the custom of the Association to make excursions to different places of architectural interest, but he was quite sure that, whether as a body or as individuals the members would be stimulated by the lecture to visit Oxford. If they went they would realise that the charming words with which Mr. Warren closed his lecture were well justified by the dignity and grace of that unique city. One travelled abroad and saw a great many architectural wonders in France, Germany, and elsewhere, but one was obliged to tell one's foreign friends that however beautiful and grand their buildings, there was no city which, as a whole, produced on one the same impression as Oxford did—except, perhaps, Cambridge. Bishop Creighton, formerly Bishop of London, after being educated at Oxford became a Professor at Cambridge, and he said to him once, speaking of the buildings of the two cities, that the buildings of Oxford, beautiful as they are, have not the same singular grace of some of the old brick buildings of Cambridge. He (the speaker) did not agree with that, and thought the Bishop was indulging in one of his paradoxes, but when one went to Cambridge and saw the brick buildings, one would agree that there was something in what the Bishop said, and that Cambridge had points of beauty which Oxford had not. Still, he hoped they would visit both cities.

The Chairman, in putting the vote of thanks, said the preparation of the lecture must have put Mr. Warren to great trouble, but it was no doubt a labour of love.

The vote was then heartily agreed to.

Mr. Warren, in reply, said it was quite right to say that the preparation of the lecture had been a labour of love. He loved Oxford, and he went about the city and renewed impressions, and found for himself works and remains which he had not seen before. The preparation of the paper had taught him things he did not know, and had lead to his further education. He should like to give full acknowledgments to the use he had made of Mr. Massé's little book on "Oxford." He must also acknowledge his indebtedness to the book by Mr. Bowes, and to that well-known and charming author, old Anthony Wood.

The Chairman announced that the next meeting will be held on March 6, when a

paper will be read by Mr. Forbes on "Water-colour Drawing for Architects."

He also announced that the Camera and Cycling Club are visiting Oxford at Easter.

The proceedings then terminated.

NEW BATHS FOR CASTLETON, NEAR ROCHDALE.

A COMPETITION, the award of which we gave in our last week's issue, has been held for new baths at Castleton, which Rochdale is about to build in fulfilment of a promise made on the absorption of the Castleton Urban District area in 1900. The site is on the Manchester-road, and the baths are to cost 7,500*l.*

The competition was open to England, and twenty-nine sets of drawings were sent in. Mr. A. Saxon Snell, the assessor, has placed the design of Messrs. Wallis & Bowden, of Westminster, first, and their plan has a simplicity and a symmetry which at once prejudice one in its favour. It differs from most of the other designs in two important particulars. Firstly, the main swimming-bath runs right through, without any irregular excrescences at the back. This pleasant effect, however, is obtained by means of two rather serious drawbacks. The boiler, instead of being placed at the back as in many other designs, is in a basement under the women's slipper-baths, so that its future removal, although not impossible, owing to a fall in the site, could only be managed by a great deal of underpinning. The second drawback is even more important. The filtering and aerating plant is shown in a small room some 8 ft. high in the basement near to the boiler. Now this aerating plant, which is clearly shown on the third premiated design, requires three stories—a pump in the basement, a filtering tank above, and an aerating sprinkler on the roof in the open air. In Messrs. Wallis & Bowden's plan this would be impossible, and it is doubtful if the necessary alteration to secure this would not upset all that simplicity which makes their scheme so attractive. It would seem as if the winning competitors had not really understood this aerating scheme, by means of which the water is only changed in the bath once in six months or so. In the conditions issued this method was certainly asked for, but we hope that before finally adopting it the Committee will look into the matter very carefully. In the opinion of many bacteriologists this method of purifying the water is not considered very effective, as air would hardly destroy the contamination of water from certain sorts of skin diseases. Anyhow, the neglecting of this provision greatly helps the first premiated design in its simplicity of planning.

The second point in which this scheme differs from most of the others is in the position and arrangement of the slipper-baths. In a memorandum which was sent round to the competitors subsequent to the original conditions it was recommended that the slipper-baths should be so planned that at a given time the whole range, both male and female, could be used by one sex. Many of the competitors entirely ignored this, dividing the slipper-baths into two distinct sections by the entrances to the swimming-bath. In the second premiated design they are kept contiguous, but by dint of crowding them in a bewildering maze round a minute area, with poor chance of future extension. Messrs. Wallis & Bowden have got over the difficulty by the simple device of putting the slipper-baths on an upper ground floor, and then carrying the men's second-class across the front over the main entrances; this range of baths would act as a connecting-link on occasion; and the whole of the slipper-baths could be thrown into a single suite without interfering with the working of the swimming-bath below. There is a good deal of top lighting, which is unobjectionable, and the two areas are of reasonable size, and future extension is well provided for.

The main swimming-bath, 75 ft. by 30 ft., is treated with the utmost simplicity, a precaution, we imagine, wisely dictated by cost; some of the various gala contrivances of the other competitors being distinctly impossible on this score.

The main front is the most dignified sent in. We think, however, that the design would be more homogeneous if the two main piers were joined together by a pediment. But this is a very different style of architecture from the distressing red terra-cotta technical schools which have recently been built in Rochdale itself, utterly destroying the impressive effect of the Parish Church, Town Hall, and Manor House.

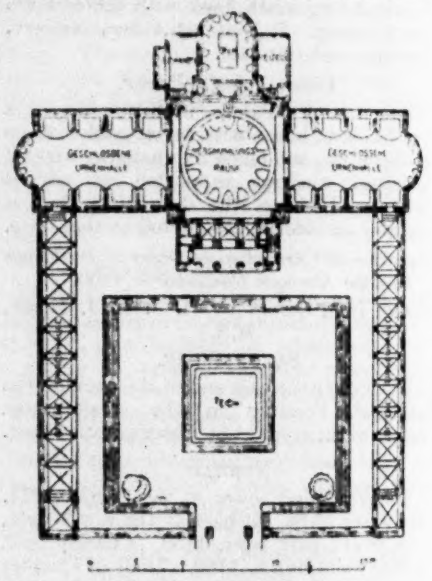
The design of Messrs. Butterworth & Duncan, Rochdale, who were awarded the second premium (15*l.*), is in every way inferior to the first premiated, both on plan and elevation. These latter are fussy and suburban in character.

Mr. Hathaway (third premium, 10*l.*) has produced a plan which, while it ignores the special requirement about the slipper-baths, has several points to recommend it; particularly the boiler and aerating plant, which are placed at the back and conveniently planned. The elevations are charmingly drawn, and were in better style than the second premiated. No. 45 is one of the best designs sent in, but the plan is impracticable with three main entrances on the front. Altogether, bating the question of the aerating plant, there is no doubt that Messrs. Wallis & Bowden's is the best scheme sent in.

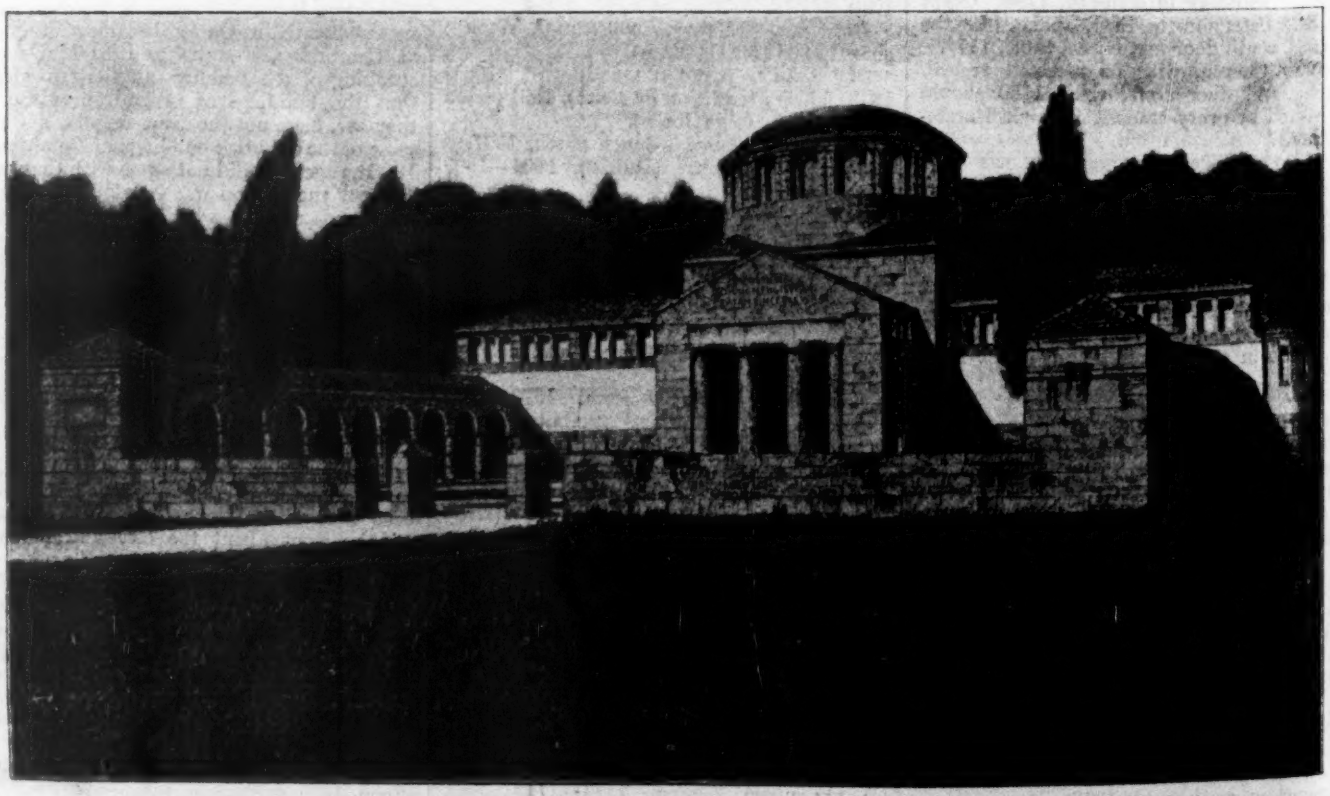
The drawings were on view at the Rochdale Town Hall, to architects and others interested, on application until Thursday, March 5.

DESIGN FOR A CREMATORIUM.

THIS is reduced from an illustration in *Berliner-Architekturwelt*. It was the first premiated design in a competition for a



Plan of Crematorium.



Design for a Crematorium. By Herr A. Fröhlich.
(From *Berliner-Architekturwelt.*)

crematorium for Zürich; whether it is to be carried out we do not know.

There is a kind of fine and impressive solemnity of expression about the design, eminently suitable to the purpose of the building. Herr Fröhlich, of Charlottenburg, (Berlin), is the architect.

COTTAGE HOSPITAL COMPETITION, HOYLAKE.

SIX Liverpool architects were invited to compete for this cottage hospital, which is to occupy a corner site among sandhills on the Birkenhead-road. In order to face south, the hospital has to turn its back on the sea, which is a distinct advantage, as the winds are so strong during six months of the year that some shelter is imperative.

A cottage hospital is always an uncertain quantity. There is no definite rule as to how much of the hospital and how much of the cottage element should predominate. In the present case there were to be two wards for men and two for women, containing four and two, and six and two beds respectively. The question then arises whether it is necessary to have one or two duty-rooms, isolated sanitary blocks, and a hospital wing proper, which can be cut off from the rest of the house.

Mr. Alfred Culshaw, F.R.I.B.A., the assessor, has placed the design submitted by Messrs. Grayson & Ould first, and it is interesting to note the peculiarities of their plan. It is compact and symmetrical and undoubtedly economical, the whole building being practically in one block. The house portion and the hospital are mixed up together, the men's and women's quarter being separated on the south front by the two nurses' sitting-rooms and the Board-room. There are no nurses' duty-rooms and no external supervision to any of the wards. The sanitary blocks are not isolated. The front door is placed on the north front directly facing the sea, so that when there is a wind it can hardly be opened. Also facing you as you enter by the main approach is the not prepossessing range of larder, scullery, dust-bin, mortuary, and washhouse, unmistakable one-story buildings; and the servants' conveniences have been omitted altogethers. An objectionable feature of the plan is a corridor nearly 100 ft. long, inadequately lit at either end, and only 4 ft. 3 in. wide. For the whole traffic of the hospital, including wheeling patients to the operating theatre or taking a corpse to the mortuary (which has to be carried through a bath-room), this is surely too narrow.

The elevations are plain and not unpleasing, with the exception of a rather poor verandah to the hospital facing the Birkenhead-road; this verandah, by-the-bye, can only be entered by the patients passing through the Board-room—not an ideal arrangement. The sum allowed, which was not to exceed 2,000*l.*, or nearly 150*l.* a bed, should prove quite enough to carry out this scheme.

The other designs showed great variety. Two had the hospital portion divided by the main entrance, which is hardly desirable. Two others showed the hospital wing separated from the rest of the house by folding-doors, an arrangement which seems to us to have many advantages, not the least being that the nurses' private sitting-rooms can by this means have a certain amount of privacy secured to them. Duty-rooms were provided in all the other schemes, and in three of them the sanitary blocks were isolated.

The drawings were on view on Thursday and Friday, February 27 and 28, at 14, Chapel-street, Liverpool.

MEMORIAL TO MRS. CRAIGIE.—The fund for the memorial to the late Mrs. Craigie (John Oliver Hobbes) will very shortly be closed, and the committee hopes that the medallion of Mrs. Craigie, which is being executed in bronze by Mr. Alfred Drury, A.R.A., will be placed and unveiled in University College, London, early this summer. A replica of the medallion will be sent to New York.

MANCHESTER SANITARY AND BUILDING TRADES EXHIBITION.

THIS exhibition, which is held in St. James' Hall, Oxford-road, Manchester, was opened on Tuesday, March 3, by the Lord Mayor of Manchester (Alderman E. Holt, J.P.) with Sir William H. Bailey in the chair.

The exhibition, while not showing many striking novelties, contains a great deal of interest in the 110 stands which have been arranged round the hall.

The Tip-up Bath Company (Birmingham) show their bath (Stand 15-16), which has been used extensively at Bournville. It is a great improvement on the old rubber attachment; the waste pipe here acts as a sort of hollow hinge upon which the bath turns. The full-size model of a workman's scullery which they show, 8 ft. 4 in. by 6 ft., containing bath in cupboard, larder in cupboard on outer wall, sink and portable boiler, all arranged to work in with the outside door and door to living room, is a neat and instructive exhibit.

The copper boiler which is shown in the last-mentioned stand, is made by Messrs. Morwood (Manchester), and is a compact and sightly one. A good point in it, is that it stands upon cast iron feet, 6 in. clear of the ground. We hope in time that this sort of boiler will entirely oust the clumsy brick erection which is still in use. Their Squirrel Washer is ingenious, but we doubt if the average domestic would not find its ingenuity rather bewildering.

A somewhat similar charge must be brought against the Beb Bath (Stand 103), shown by "Sanitaries, Ltd." (Manchester). This amazing contrivance is small enough for an infant and large enough for a collier. It will also pack up into a neat portable travelling case. Simpler and very practical is Dr. Quine's Stationary Tipping Ash-bin, also the Wall Cage for Ash-bin, both manufactured by this firm, and both enabling the ash-bin to be emptied without entering the yard. The wall-cage, however, would not prevent a man climbing through by the same way.

The Mowbray earth-closet hatch (Stand 97) shown by Messrs. Kirtley & Son, Ltd. (Sunderland) is a clever patent. The fact that there are no hinges to rust and that the door cannot be lifted out and carried away is distinctly advantageous; also the entire absence of wood.

Messrs. Cakebread, Robey, & Co.'s spring trap cleaner (Stands 100—101) is simple and effective.

Turning to the more constructional exhibits, we find Messrs. Johnson, Clapham, & Morris, Ltd. (Manchester), showing a very complete exhibit of their H.B. brick reinforcement system (Stands 50, 51, 52). This consists of galvanised steel wire netting, 2½ in. wide, which is bedded in every horizontal mortar joint. By this means external walls, consisting of a 4½ in. outer wall, 2 in. cavity, and 3 in. brick-on-edge inner wall, may be built with a strength supposed to be equal to 14 in. solid wall. Internal partitions consisting of two brick-on-edge walls with an 1½ in. cavity would be exceedingly sound-proof. The way in which this wire-netting reinforcement can be bonded into a reinforced concrete pier is well shown. We think that this system, which aims at the strengthening of the weak cavity wall, has much to recommend it.

The British Concrete Company (Liverpool) show a real cottage wall, including entrance-door and window, built in hollow concrete blocks (Stand 39), made by what are appropriately called their Cyclops machines. The masonry is truly Cyclopean, and we only wish they could turn out something a little less rusticated, rock-faced, and chisel-draughted. Smaller blocks, with comparatively smooth faces, and of which the size might be varied, would take away the look of dungeon-like monotony. Their moulded and enriched stonework is not yet successful, nor the colour of their red bricks. The sand bricks, of a natural colour, are more pleasing, and they should have been shown in a piece of walling by themselves;

The Hemp-tead Patent Brick Company's (Herts) hollow partition blocks (Stands 27 and 28) show a very high fire-resisting property. These are made from a local clay which happens to have this property, in addition to which it is said to be more sound-proof than the plaster slab partitions. But it is impossible to test this quality at an exhibition.

The Frazzi partition (Stand 107) also relies for its special quality on the fact that it is made of clay from the River Po, near Cremona. It is remarkably light, a 2¼ in. partition weighing only 7 lb. per square foot. The texture is exceedingly fine, and the surface smooth, but well-keyed for plastering. Fireproof floors are carried out in the same material. The same firm's partition made from English clay does not present this peculiarity of lightness.

The interlocking joggled bricks (Stand 28) shown by the Bagworth Brick Company (Leicester), are admirable for constructing sewers. They are made on the curve, and could be set without the skilled labour necessary for constructing sewers out of common brick.

Messrs. F. McNeill & Co.'s metal asphalt damp course (Stand 24), which contains a thin sheet of lead between asphalt courses, is a sound and practical idea. Their three-ply combination roofing, which is laid in rolls, would seem to require more labour in laying than some of the simpler forms of asphalt roofs. The layer of sand and gravel on the top might be liable to be displaced by wind.

Messrs. Mark Fawcett's fireproof floor (Stands 84 and 85) is too well known to need description, but their "Edwardian" chimney-pot, of which there is a large exhibit of varying colours and sizes, is a great benefit to the world at large, if it does away with the necessity for unsightly lobster-backs, etc. No architect would object to putting them on a building, to begin with. The glazing of the cup-shaped upper surface to the protecting lid is a wise precaution.

The asbestos roofing tiles, made by Messrs. Machin & Kœnig (Stands 43 and 44), are shown laid on a roof. We understand that the ugly diamond shape is not essential, but is considered more economical. In appearance the red tiles are not good in colour, and are far too thin, resembling rather sheets of paper. Their good weathering and non-conducting qualities cannot compensate for this defect. The ordinary Welsh blue slate is preferable in every way.

The "Plastoment" asbestos floor (Stand 123) is an ingenious contrivance consisting of two thicknesses, a flooring material above and a pad of asbestos material below, which is supposed to absorb the inevitable cracks of a concrete floor, before they get to the outer crust. This is an important point in jointless floors, when one remembers the fallibility of Terrasso in this respect. The appearance of the floor is slightly less objectionable than Terrasso, although the colours are not very good, with the exception of a superb lapis-lazuli blue; a floor laid with this alone should have a fine effect. Some samples in this exhibit, of a close imitation of the effects of Terrasso in Plastoment, strikes us as a singular waste of energy.

Messrs. Acop, Ltd. (Manchester), are agents for Messrs. Mellowes, Callender, and others. Messrs. Mellowes & Co. show a complete conservatory, with roof and sides in their Eclipse glazing (Stands 21 and 22). The merits of this method are well known, but the effect in a building standing by itself is rather lean.

Messrs. Acop also show a new substitute for glass; a gelatinous substance enclosing a fine wire network, and not very transparent. Manu-marble is a tolerable imitation of marble (as imitations go), but the granite is not so good.

The Christie patent stone (Stretford, near Manchester) is interesting as showing an artificial stone which may be carved (Stands 60 and 61).

Messrs. Smith & Wellstood (Stands 74, 75, and 76) show a large range, which we suppose is the last word in complete mechanical contrivances.

Other exhibitors are Messrs. Wilson & Co. (Manchester), Eagle range and heating apparatus; Messrs. J. Duckett & Son, Ltd. (Burnley), sanitary ware; The Saxon Portland Cement Company; the Van Kennel revolving door; the Aerograph spray painter; the Enderby & Stoney Stanton Granite Company (Leicester); Messrs. William Hilton & Sons (Manchester), marble work; "Vulcanite," Ltd.; Messrs. Kirkpatrick Bros. (Manchester), granite.

The Exhibition is open until March 14, from 11 a.m. to 10 p.m.

PICTURE EXHIBITIONS.

WHAT is rather foolishly called the "Exhibition of Fair Women" at the New Gallery, a sort of claptrap title to catch the general public, contains a good many ugly pictures of ugly women, or women who are made to look so by the artist. In spite of this, however, we must say that it has been underrated in the general press notices. Some of the works of the most modern school that are exhibited, however deficient in beauty, are very interesting as experiments in style and treatment in portraiture; and there are some very fine works, not unknown, which it is a pleasure to see again. An exhibition which includes Watts's grand and monumental portrait of "Mrs. Wyndham" and Mr. Sargent's celebrated group portrait of three ladies in white, which made such a sensation at the Academy some years ago, and is perhaps the finest thing he has done, is not an exhibition to be spoken lightly of. The South Room contains a numberof interesting sketches and studies by Millais and Rossetti and by Mr. Strang and other living artists, together with some absurdities and vulgarities which had better have been left in oblivion.

Of the minor exhibitions now open by far the best and most important is the second exhibition by Miss Beatrice Parsons of her water-colours of garden subjects (mostly) at Messrs. Dowdeswell's Gallery; a class of work in which she established herself at once as one of the first water-colour artists of the day; and the present exhibition is even more decisive in its proof of rare talent combined with most conscientious and careful study and execution of detail. We notice this in one incident that specially appeals to us—the drawing (5) in which Spalding Church spire is introduced in the middle distance, with its reflection in the foreground water. The tower and spire are as carefully and correctly drawn as if the artist were an architect; a great contrast to the careless and sloppy manner in which architecture is often treated by landscape artists. Among the most charming drawings in the collection are "Flushing Village" (4) and "Falmouth Harbour" (21), each seen from a garden foreground; and "The Lawn, Ayscough Fee Hall" (32). But the whole of the drawings are of the highest merit in their class of subject.

Mr. Bellingham-Smith's "English Castles and other drawings" at the Fine Art Society's Gallery are disappointing; they are slight and in some cases rather affected in style; the two drawings in the street of Swanage (2 and 12) are the best. In another room in the same gallery is a collection of water-colours by Mr. Hugh L. Norris, in the modern style, which seeks colour and atmosphere rather than detail; but in their own style they are fine work; "Old Mill at Trafalgar" (12) even reminds us of Alfred Hunt. The author has a sense of composition with simple materials, as shown in "Ragwort" (51). On the other hand, the want of execution in detail tells its tale in such a subject as "Coast-Line Outside Boscastle" (24), where we know that one part of the paper must be meant for sea, because we see the cliffs jutting out into it, but there is no other indication of sea surface.

The weakness of the Old Dudley Art Society's exhibition, at the Alpine Club, is (as usual) want of character. There is a room full of water-colours none of which fall below a certain standard, but which represent just what may be called average art. The exceptions are mainly to be found in the contributions of Miss Jex-Blake and Miss Margaret Bernard, who are water-colour artists with an original style and power of their own; the former lady's "Stormy Day in Brittany" (117) is really fine. There are a good many things in the room, of course, that are very good average work; but a whole room full of average work becomes a little dull.

REINFORCED CONCRETE BEAM TESTS.

ON February 11 a reinforced concrete-beam manufactured by the Improved Construction Company was tested by Messrs. Kirkaldy & Son, the object of the first test being to observe the behaviour of the beam under the concentrated load of 50,000 lb. applied over a bearing 8 in. long at the middle of the span. The second test was undertaken for the purpose of ascertaining the value of the reinforced concrete in the compression side of the member.

The beam measured 16 ft. 6 in. long by 10 in. broad by 15 in. deep, the clear span between supports being 15 ft.

The concrete was stated to have consisted of one part Portland cement, two parts sand, and five parts broken stone, 1 in. gauge. At the time of testing the age of the beam was sixty days.

The reinforcement comprised five $\frac{3}{4}$-in. square bars, eight $\frac{1}{2}$-in. square bars, and three flat plates of expanded metal, light, medium, and heavy—all the foregoing constituting tension reinforcement. In addition, there was compression reinforcement, consisting of a spiral coil of $\frac{1}{4}$-in. rods, the diameter of the coil being $8\frac{3}{4}$ in. and the spacing of the spirals $1\frac{1}{4}$ in. centre to centre. Five $\frac{1}{4}$-in. longitudinal square rods were placed inside the upper part of the spiral.

Shear, tension, and compression reinforcement was provided further in the form of a mesh-work of $\frac{1}{4}$-in. rods with $\frac{1}{4}$-in. longitudinal square rods, the netting so formed being carried round all four sides of the beam at the distance of $\frac{1}{2}$ in. from the outer surface of the concrete.

The total cross-sectional area of steel was 5 per cent. of the total area of the beam, which was designed for the safe load of $17\frac{1}{2}$ tons with the ends fixed, or, say, $8\frac{3}{4}$ tons with the ends free, as tested.

From Messrs. Kirkaldy's report it appears that the deflection of the beam increased very regularly with the load until, when under the total load of 35,000 lb. the deflection was 0·386 in., and some fine hair cracks were observable on the tension side. At the load of 40,000 lb., the deflection was 0·46 in., and the cracks had not perceptibly increased. The test was discontinued at the load of 50,000 lb. in order to permit a further experiment to be made upon the same beam. At that stage the deflection was 0·633 in., and the hair cracks were more pronounced, being regularly distributed for about 21 in. on each side of the middle of the span.

On removal of the load the deflection almost immediately went back to 0·04 in., but this small permanent set disappeared after the lapse of two hours.

The second test was commenced after two external tension bars had been bolted to the sides of the beam, the object of these being to permit the imposition of loading up to the failure of the beam in compression.

Notwithstanding the additional reinforcement, it was found that the deflection of the beam up to the total load of 46,000 lb. was greater than during the first test. Thenceforward the rate of increase of deflection became less, until at 50,000 lb. it was only 0·603 in., as compared with 0·633 in. on the previous occasion.

The first indication of failure by compression was observed at the load of 72,000 lb., when the deflection was 1·38 in. The concrete commenced to show swelling and flaking on the compression side, and, finally, under the load of 74,100 lb. the deflection was 3·31 in., and the spiral reinforcement burst.

Without precise determination of the position of the neutral axis it would be impossible to speak definitely concerning the extreme fibre stress of the concrete in compression or the mean stress on the same material per square inch, but it is quite clear that the ultimate resistance of a beam such as this could be considerably increased at a very moderate cost by the use of additional or larger tension-bars and a stronger spiral of compression reinforcement.

THE LONDON MASTER BUILDERS' ASSOCIATION.

THE thirty-sixth annual general meeting of the London Master Builders' Association was held at Nos. 31 and 32, Bedford-street, Strand, W.C., on Thursday, February 27.

The minutes of the last annual general meeting were read and confirmed, the annual report and audited accounts for 1907 were received and adopted.

The following elections were made for the ensuing year:—President, Mr. William Lawrance (Messrs. E. Lawrance & Sons); Senior Vice-President, Mr. F. G. Rice (Messrs. Rice & Son); Junior Vice-President, Mr. L. Horner (Messrs. Ashby & Horner); Treasurer, Mr. G. Bird Godson (Messrs. G. Godson & Sons); Executive Council (to fill rota vacancies), Messrs. C. Ansell, G. Appleton (Messrs. Turtle & Appleton), H. A. Bartlett (Messrs. Perry & Co.), Wm. Downs, J. Garrett (Messrs. J. Garrett & Son), E. J. Hill (Messrs. Higgs & Hill, Ltd.), Mr. Lawrence, jun. (Messrs. Walter Lawrence & Son), F. G. Minter, F. P. Rider (Messrs. T. Rider & Son), Howell J. Williams (Messrs. H. J. Williams, Ltd.).

A hearty vote of thanks was given to the outgoing President (Mr. F. L. Dove, London County Council).

In its thirty-sixth annual report, which was submitted at the meeting, the Council regretted that the depression in the building trade was more acute than ever, striking evidence of this being conveyed by communications from members and others. Their relations with the various trade unions continued to be satisfactory, and very few occasions had arisen for the Conciliation Boards to assemble to adjust differences. Since their last report a working rule agreement had been entered into and signed with the mill sawyers and wood-cutting machinists practically on the same lines as those obtaining between the Association and the other trades.

Bills before Parliament affecting the building trade had been carefully watched by the Council as well as by the Employers' Parliamentary Council; and whenever it was thought desirable steps were taken to safeguard the interests of the trade. Not the least important matter was the Bill promoted by the Metropolitan Water Board dealing with the charges for water generally throughout London. As far as building supplies were concerned, the Council had deemed the Bill of such first-class importance that it instructed its solicitor to engage counsel to represent it when the Bill was before the Joint Committee of both Houses of Parliament, and the President and Mr. Shepherd gave evidence before that Committee. Notwithstanding the great amount of opposition to the Bill from all quarters, both public and private, comparatively little alteration was made in it. The Association may, however, congratulate itself upon now possessing the right to demand a building supply, a privilege that formerly was not enjoyed except in very few districts.

During the past year considerable time and thought had been given by the Council

to the question of securing new office accommodation. A great number of buildings were inspected, but in no instance was suitable convenience found. The Council then turned its attention to the consideration of acquiring a site, as it was felt that an organisation of the importance of the London Master Builders' Association should be housed in its own building. After inspecting various sites one which appeared eminently suitable for the purpose was found in Kingsway, running right through to Lincoln's Inn-fields, and the Council had obtained terms which were fair and reasonable. The Council was at present engaged upon considering a scheme for the erection of a building which would be worthy both of the position and of the organisations which it was proposed should occupy it.

Illustrations.

RENAISSANCE AND MODERN CHURCHES OF PARIS.

III.—STE. GÉNEVIÈVE (NOW THE PANTHÉON).

THE Panthéon has long ceased to be a church; but since it was erected as a church, with the dedication to Ste. Géneviève, and has fulfilled that function during more than one long term of years, we include it among the remarkable churches of Paris.

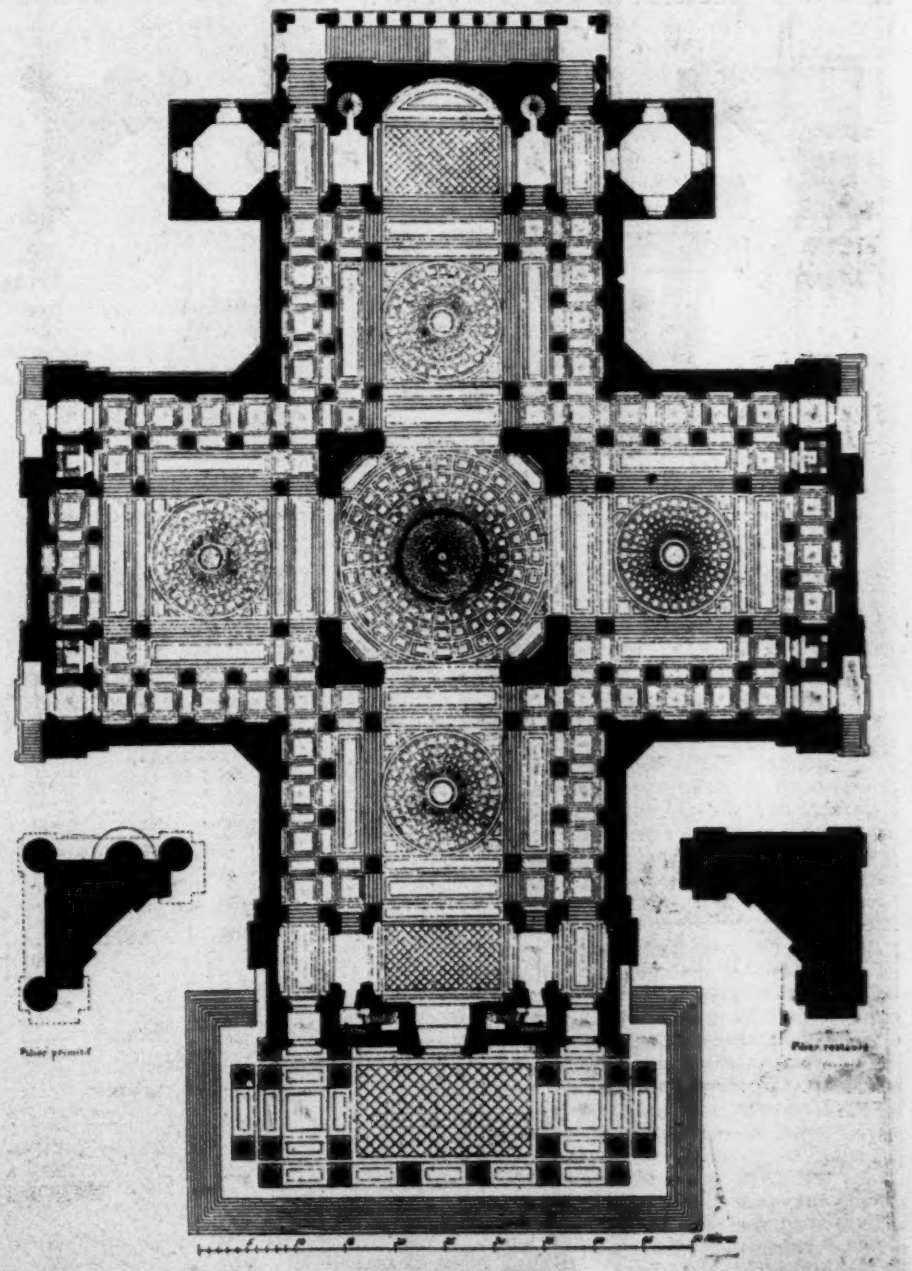
In 1744 Louis XV., then seriously ill at Metz, made a vow to erect a church in honour of the patron saint of Paris, and Soufflot was commissioned as architect for the building, the first stone of which was laid by the King himself on December 6, 1764. In 1780, however, Soufflot died without having completed his work, which was carried out, from his plans, under the architects Brébion, Vidal de Saint-Maur, and Rondelet.

The building, which was the great architectural event of the close of the XVIIIth century in France, has passed, down almost to our own day, through a series of strange vicissitudes. In 1791 the "Assemblée Constituante" transformed the church of Ste. Géneviève into the "Panthéon Français," and suppressed, *ipso facto*, the decorative scheme of Soufflot, who had entrusted the sculpture of the tympanum to Coustou; and a number of new commissions were given, suitable to the taste of the day. In 1806 Napoléon restored the building to its function as a church, retaining, however, the idea of its use as a receptacle for monuments of eminent men. More than 2 million francs were set aside for its completion, and Baron Gros, official painter under the Empire, was commissioned, in 1811, to paint the cupola with a composition in which the figures of the Emperor and Empress were to be introduced in company with Clovis, Clotilde, Charlemagne, and Saint Louis. At the Restoration new artists with new commissions were appointed, but Gros executed the painting of the cupola, from which the figures of Emperor and Empress were carefully excluded. The Revolution of 1830 again removed the building from ecclesiastical use to dedicate it "aux Grands Hommes," and the existing tympanum sculpture was executed by David d'Angers. Cortot was commissioned to execute a colossal figure of "Immortalité" to surmount the dome, of which there remains only a small bronze model preserved in the Louvre. In 1848 Ledru-Rollin entrusted the general decoration of the interior to the painter Chenavard, who made a series of cartoons (now in the museum of Lyons) representing "La Transformation de l'Humanité." In 1854 the Prince President, Louis Napoléon, again restored the building to use as a church and to its original dedication to Ste. Géneviève; and, after the war, the government of Marechal MacMahon approved the programme for interior decoration, which has since been carried out in the main, though the death of several of the artists—especially Paul Baudry, Carpeaux, and Meissonier, necessitated some alterations in the scheme. Finally, in 1885, Parliament once more secularised the building, at the moment when the remains of Victor Hugo were being deposited there. There was talk at the time of pulling down the cross which still stands on the apex of the dome, an operation which was only abandoned owing to the practical difficulty attending it.

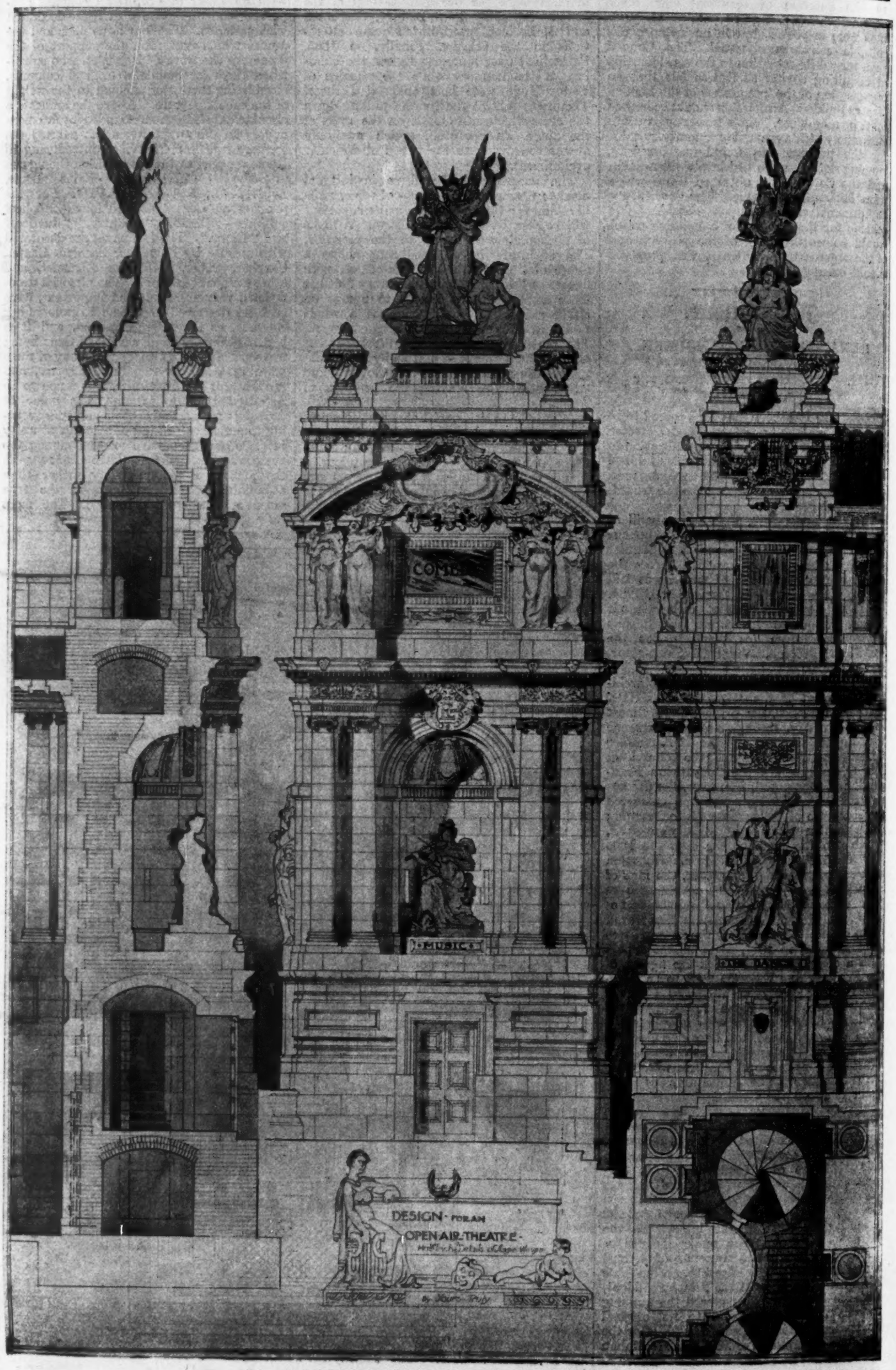
The building is 83 mètres in internal height; the height to the top of the cross is 117 mètres; the other principal dimensions will be seen by the annexed plan. A flight of eleven steps leads up to the peristyle. The sculpture in the pediment shows a figure of "La Patrie" in the centre, with figures of "Liberty" and "History" at her feet; she distributes crowns to figures on either side. The composition as a whole ranks as David d'Angers' greatest work. The peristyle is decorated with bas-reliefs and with two groups in marble by Maindron, representing "The birth of Clovis" and "Ste. Géneviève staying the progress of Attila."

About the exterior, with its great columns, heavy sculptured garlands, and the vast masses of unbroken wall surface at the sides, there is an expression of austere grandeur.

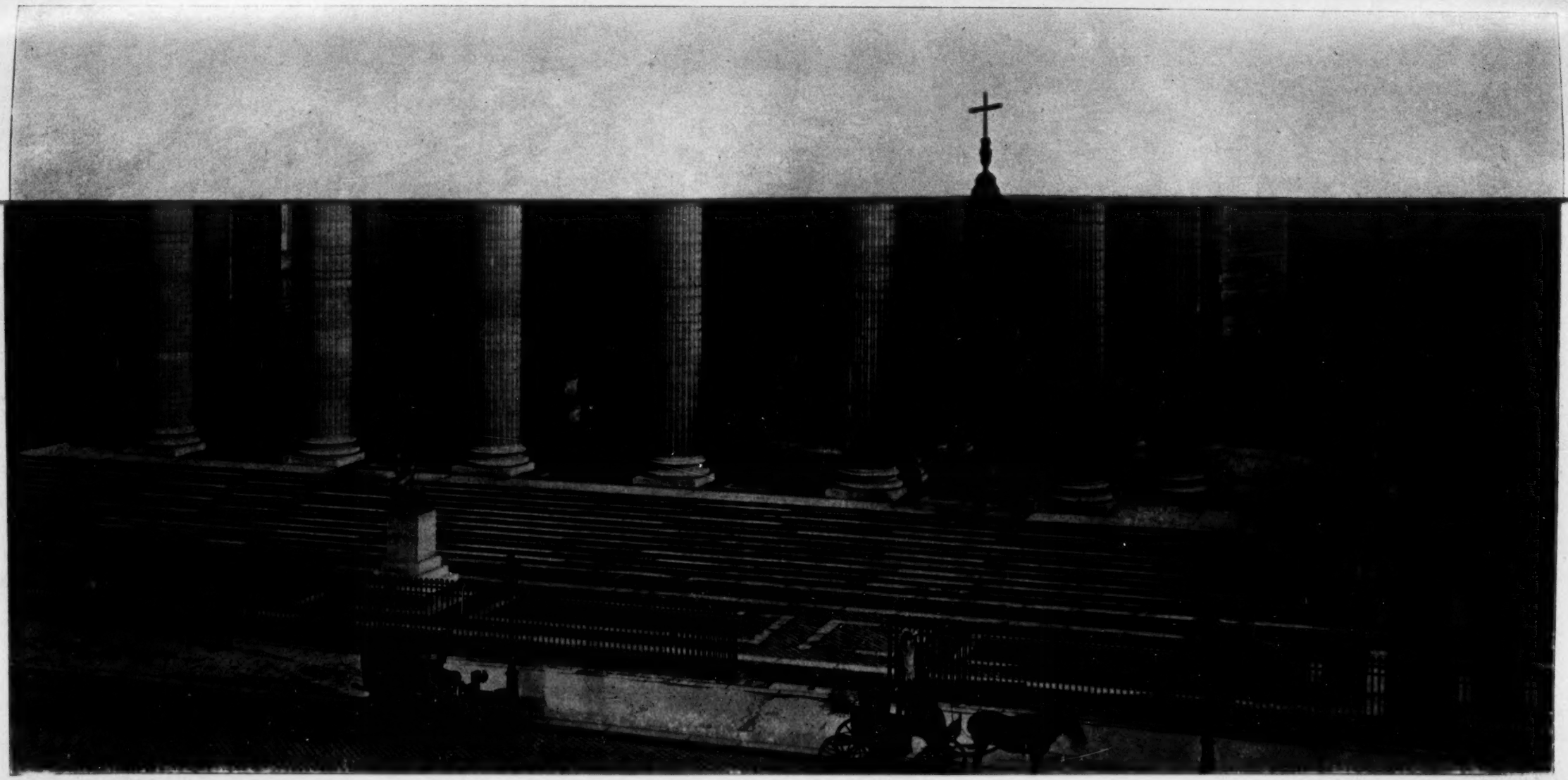
Internally the aisles and transepts are raised by five steps above the main level of the central portion. The interior is decorated with an order of Corinthian columns supporting an entablature with frieze decorated with garlands. The four large piers and the arches which now form the support of the dome are the work of Rondelet, who substituted them for Soufflot's original columns, considering the latter unequal to the weight of the superstructure. Above the arches is a circular entablature surrounded by a colonnade. In the cupola Gros has painted the apotheosis of Ste. Géneviève, introducing in the lower part of the composition the figures of Clovis, Charlemagne, Saint Louis, Louis XVI., and Louis XVIII. For the pendentives Gérard painted four symbolical subjects—"Death," "Country," "Justice," and "Glory." The two naves are decorated with statues by Falguière, Perraud, Chapu, Cavelier, Cabet, Guillaume, Frémiet, and other eminent sculptors. The pictorial decorations, very numerous and important, have all been described from time to time in our columns, as they were executed, and it is hardly necessary to give a list of them here; we may only remark that while many of these paintings are very fine in themselves, and the work of great painters, it is much to be regretted that no attempt was made at drawing up a general scheme and endeavouring to secure some kind of attempt at unity of style and decorative method among the various artists. As it is, the interior suggests the idea of a picture-gallery rather than a building which has been in the true sense of the word decorated. The most



Plan of the Panthéon, Paris.
(From Isabelle's "Edifices Circulaires.")



Design for an Open-Air Theatre. Details.



Albert Lévy, Photographer, Asnières.

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RENAISSANCE AND MODERN CHURCHES OF PARIS.—III. STE. GENEVIÊVE (NOW THE PANTHÉON).

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RENAISSANCE AND MODERN CHURCHES OF PARIS.—III. STE. GENEVIÊVE (NOW THE PANTHÉON).

Title Prize, R.I.B.A., 1908.

DESIGN FOR AN OF

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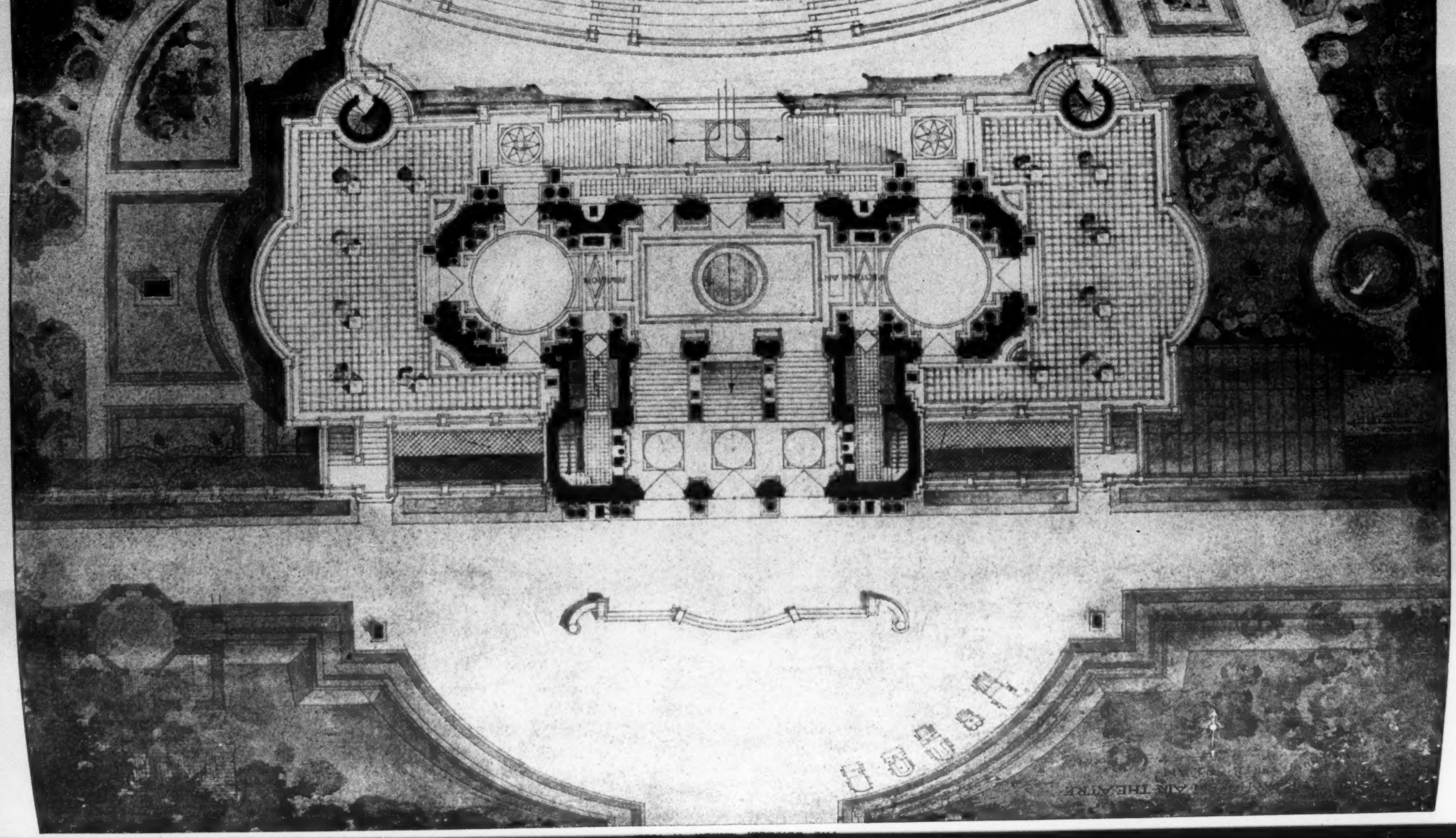
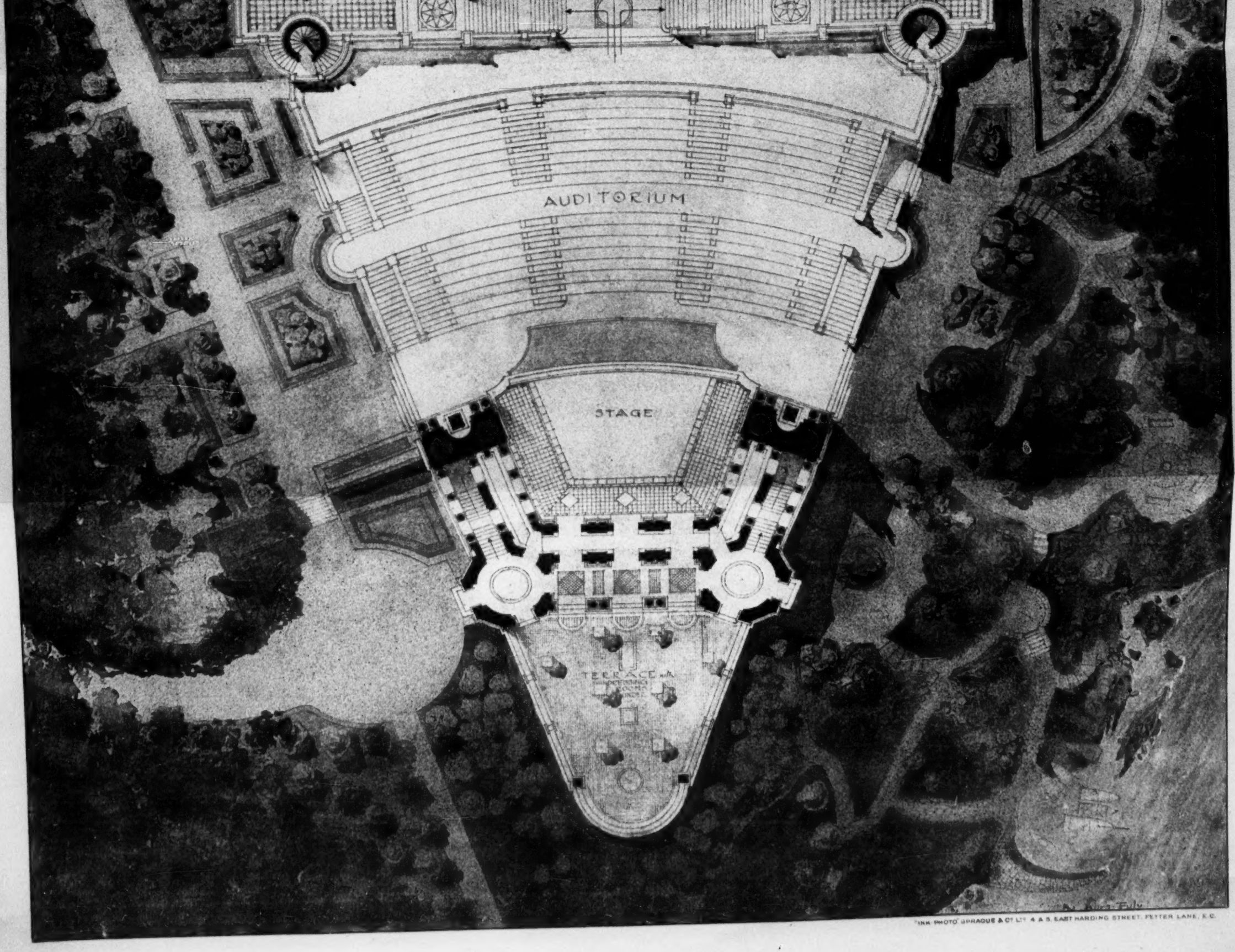
ESIGN FOR AN OPEN-AIR THEATRE.—By Mr. George Drysdale.

PERSPECTIVE VIEW.

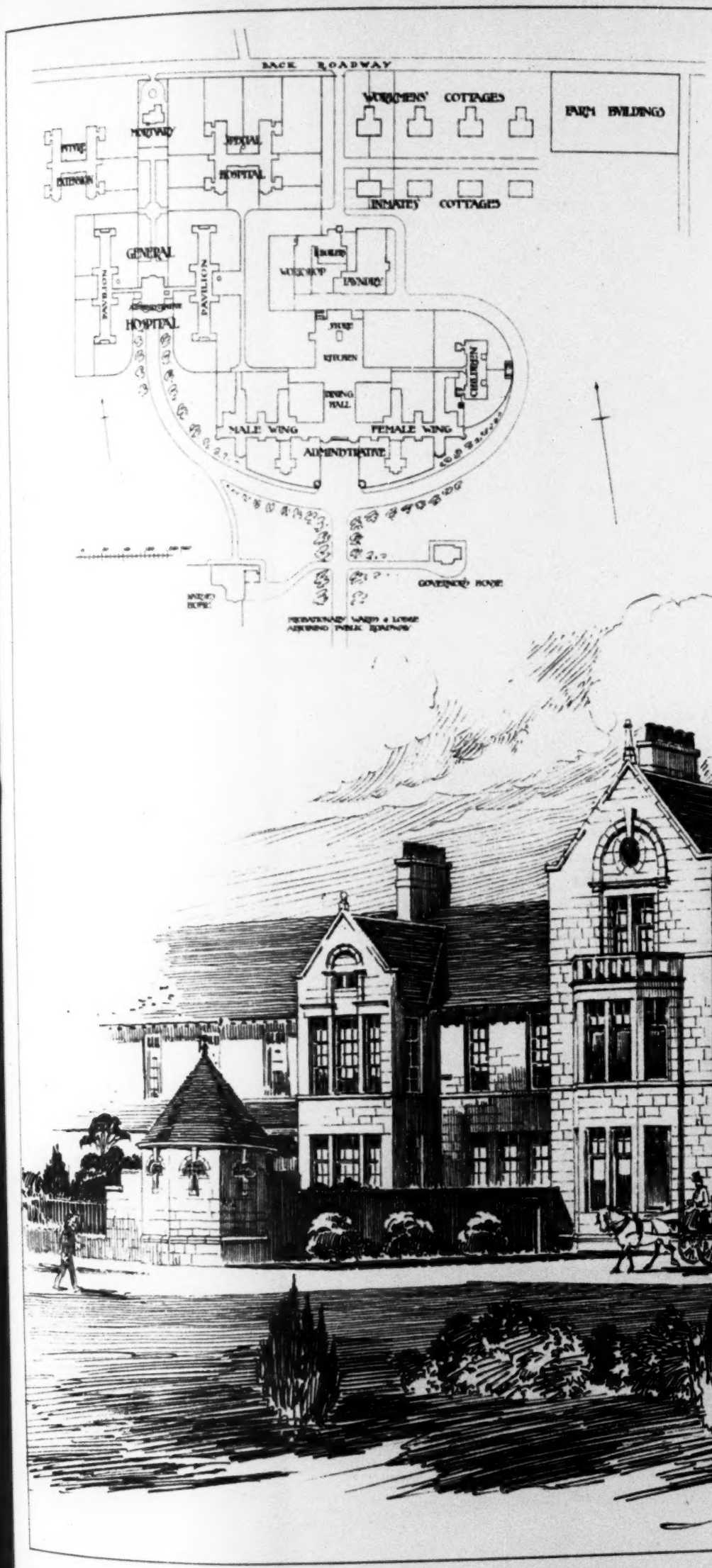




DESIGN FOR AN OPEN-AIR THEATRE.—By Mr. George Drysdale

PLAN.

Tite Prize, R.I.B.A., 1908.


BACK ROADWAY
WORKMENS' COTTAGES
FARM BUILDINGS
INMATES' COTTAGES
GENERAL
HOSPITAL
PAVILION
KITCHEN
CHILDREN
DINING HALL
MALE WING
FEMALE WING
ADMINISTRATIVE
GOVERNOR'S HOUSE

POORHOUSE FOR THE PARISH OF ABERDEEN.

ADMINISTRATIVE BLOCK AND TOWER.

BROWN & WATT F.R.I.B.A. ARCHITECTS.

PHOTO-LITHO. SPRAGUE & Co L.D. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

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extraordinary piece of bad taste consists in the contrast between the figure of Christ (by J. G. Martin after a cartoon by Hébert) in the semi-dome of the apse, and the picture of a symbolical cavalry gallop on the wall beneath, painted by M. Detaille. Architecturally, the Panthéon makes one of the finest classical church interiors ever built; but the effect of these pictures, permeated by no general aim either of subject or of decorative style, and all, as it were, quarrelling with each other, is such that it is almost a grief to go into the place. The dignity and grandeur of the exterior, fortunately, remain unaltered.

DESIGN FOR AN OPEN-AIR THEATRE.

THESE illustrations are from the perspective and plan of the "Design for an Open-air Theatre" for which its author, Mr. George Drysdale, was awarded the Tite Prize of the Institute of Architects this year.

The theatre was to be on a site sloping down toward a river. The narrow end of the plan is on the lower level, as shown by the perspective view.

We commented at some length on the design when the Students' drawings were exhibited, and entirely agree with the award of the prize. We need only call attention here to the manner of execution of the drawings, the plan especially, which is that of the Ecole des Beaux-Arts of Paris—a manner which has also been adopted by American architects, but is not hitherto much in use in England. Its merits lie, to our thinking, more in the picturesque appearance of the drawing than in elucidation of the plan.

POORHOUSE FOR ABERDEEN.

THE new poorhouse for the parish of Aberdeen has been built on the estate of Oldmill, situated just outside the city boundary. The estate extends to fully 50 acres. Accommodation has been provided in the buildings for 464 "ordinary," 116 children, and 381 "sick," a total of 961, and in each case the maximum cubic air space has been allowed. There is, in addition, provision for the staff in "the house" and in a nurses' home, and in cottages, and there is a governor's house and quarters for a resident doctor. The administration department and poorhouse proper occupy the central position; the children's department is to the east, and the hospitals are to the west, where there is space to expand.

The buildings generally are two stories in height, built of grey granite, and finished throughout in a simple and plain manner. The buildings and grounds are lighted with electricity generated on the premises. The hospital wards have solid concrete and wood block floors, and the walls are finished with Keen's cement. The wards are mechanically heated and ventilated on the Plenum system, and are constructed and equipped in the most modern manner with operation-room and other accessories. The classification of the inmates has throughout been well kept in view, and the dual character of the institution is everywhere carefully recognised. The Corporation water supply has been laid on, and the sewage joins the city system. The total cost, including the site, has been about 120,000*l.*

Messrs. Brown & Watt, Aberdeen, are the architects.

The mason work was finished by Messrs. Bowie & Manson, and the following are the other principal tradesmen:—Messrs. Leslie & Hay, carpenters; Messrs. C. Maitland & Son, slaters; Messrs. J. Bannochie & Sons, plasterers; Mr. Walter Simpson, plumber; Messrs. J. & S. Fyle, painters; Messrs. Abronethy & Co., ironwork and boilers; Messrs. Pratt & Keith, electric-light wiring and bells; Messrs. Claud Hamilton, Ltd., electric-light plant; A. & J. Smith, clock; Mr. R. Tindall, cooking apparatus and heating installation (all of Aberdeen); and Messrs. D. & J. Tullis, Clydebank, for laundry fittings.

ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.

A METROPOLITAN district meeting of the Association of Municipal and County Engineers was held at the Caxton Hall, Westminster, on Friday evening, February 28. Mr. W. Nisbet Blair (St. Pancras), Vice-President, presided.

Public Baths and Washhouses.

Mr. T. W. Aldwinckle read a paper on "Public Baths and Washhouses." The ideal site for such buildings was one which admitted of all the departments—swimming-baths, slipper-baths, public laundry, etc., being placed on the ground floor, thus enabling top lighting and good ventilation. When public baths were intended for a large town there would generally be three swimming-baths, two for men and one for women. A good size for the men's bath was 100 ft. long by 35 ft. wide, the depth of water ranging from 3 ft. 6 in. to 6 ft. or 6 ft. 6 in.; greater width and depth suggested undue consumption of water. A good size for the ladies' bath was 75 ft. by 25 ft., with a depth of water from 3 ft. to 6 ft. The general design and arrangement of the men's first-class swimming-bath would depend upon whether this would be used during the winter as a public hall for concerts and entertainments. In many localities a

POORHOUSE.
FOR THE PARISH OF
ABERDEEN.

DINING HALL.
BROWN & WATT FRIBA
ARCHITECTS.

good public hall was much needed, and where that was the case would generally become a source of profit during the winter months. In order to make the bath suitable for such purposes, special arrangements must be made as regards entrances and exits, staircases, and galleries. The ventilating lantern and skylight, which formed an admirable arrangement for a swimming-bath, made a very poor ceiling for a concert hall, and had anything but good acoustic qualities. If the bath was to be used as a concert hall during the winter the dressing-boxes should be made removable. After mentioning the necessary provisions for rendering the swimming-bath watertight, he observed that the provision of slipper-baths was a costly item in public baths, both as regarded the capital outlay and the annual expenditure, and it had been suggested that these baths should be dispensed with and sprays substituted. He was, however, inclined to favour the use of both bath and spray, as he had great doubts whether the spray alone was sufficient for cleansing purposes.

Mr. H. P. Boulnois (Local Government Board) asked whether Mr. Aldwinckle had any experience of ferro-concrete for a swimming-bath. The difficulty with ferro-concrete was that it was exceedingly light, and if there was any outside water it was practically a tank, and likely to float. He suggested the use in the roof of a fortified glass—that was glass with wire netting on the inside, because with breakage of ordinary glass very serious accidents might happen to the bathers underneath. As to the number of first and second class slipper-baths, very few architects knew that it was regulated by an Act of Parliament passed in 1847:—"If more than one class, the number of second-class slipper-baths must be at least double the number of first-class, and if more than two classes, the number of the lower class must be double the number of the higher classes added together."

Dr. Brown (Medical Officer of Health for Bermondsey) suggested that the length of the swimming-bath should be increased and the depth reduced. At Camberwell the deep end of the bath was 7 ft. 6 in. There was not the slightest advantage in that depth of water except for high diving. This was not a thing to be encouraged among school children, as there was danger to the drums of the ears and strain on the lungs.

Mr. Rush Dixon (Woolwich) thought the practice sometimes adopted of putting the dressing-boxes under the gallery was a mistake. It was most inconvenient for the bather, and a great nuisance to the public using the gallery.

Mr. O. E. Winter (Hampstead) remarked that they had been troubled with leakage from their swimming-bath, and had been forced to cut away the glazed brick lining and put in an asphalt course, which had remedied the leakage.

Mr. Chambers Smith (Sutton) did not think cement could be depended upon for securing a watertight bath.

Filtration of Bath Water.

Mr. R. J. Angel, M.Inst.C.E. (Borough Engineer of Bermondsey) read a paper on "The Continuous Filtration of Bath Water." The system, he said, of maintaining the purity of water used in swimming-baths by continuous filtration as opposed to repeated renewals was a modern idea, and promised to become generally used, judging by the results obtained in institutions where the system was already installed. The adoption of such a system was based not only on the question of economy, but also on the proved hgyienic advantages it possessed. If the cost of water and heating was such that the bath could be filled with repeated renewals at frequent intervals for a small annual charge, it was of course obvious that the method must be preferable to continuously filtering the same water. If these renewals could not take place with sufficient frequency to allow the water to be used with a tolerable degree of cleanliness for the last bather, then the argument must be all in favour of continuous filtration.

The following advantages were claimed for continuous filtration—(1) The water is never allowed to get into an unclean state, such as may be the experience of the last bather in water ready to be thrown away under the old system; (2) the water is uniformly heated throughout at all times, and those cold areas which exist during the first hour or two in water heated after filling are avoided; (3) a total absence even in a crowded bath of that close "body" smell so well known in the atmosphere of most public swimming-baths which are much used; (4) a continuous current of water is maintained through the bath; (5) economy of water; (6) saving of time of the employees attending in the early hours of the morning to heat up a fresh bath.

A comparison of the cost of working the Bermondsey bath before and after the installation of the plant showed an expenditure in the year previous to installation of 243*l.*, and in the year after installation of 54*l.* 14s. 8d.

In the purification of the water there were three different processes engaged (1) mechanical; (2) biological; (3) chemical. In the first place there was the mechanical cleansing of the water from the coarser impurities by the filter. The finer the material in the filter and the thicker the layer through which the water had to pass the more effectual this would be. The next process, the biological, also took place in the filter, and was probably due to the activity of anaerobic organisms in its interstices. The periodical cleansing of this filter by live steam no doubt put a temporary check on this action, but when the water was put through the filter again the spar would soon regain a fresh supply of anaerobes. The third cleansing process—the chemical—was due to the exposure of the water to the atmosphere by the aerator on the roof. This was principally one of oxidisation, in which the greater portion of the organic matter would be destroyed by the combination of the atmospheric oxygen with it, the final products being water, carbonic acid, and an innocuous residue.

The water had been analysed both before and since the plant had been installed. The analyst's remarks respecting the sample of unfiltered water were that it was much polluted and contained many bacteria. With regard to sample B. (filtered and in use five months) he stated that the organic matter equalled only about one-sixth the quantity in the unfiltered water. There was no epithelium or bacilli adhering thereto as was found in the untreated water.

The cost of the plant and builders' work was 965*l.*, and was defrayed out of revenue. The plant would deal with 20,000 gals. per hour; the water in the large swimming-bath being changed every four and a half hours by this process of circulation. The plant consisted of a strainer to intercept particles likely to obstruct the pumps, two pumps to deliver the water to the aerator, an aerator to oxygenate the water, situate on the roof, a filter capable of filtering the water, provided with means of cleansing the filtering surface when required, a heater-condenser capable of condensing the steam used by the pump and of raising the temperature of the water for about 50° to 74° Fahr. when supplied with auxiliary live steam, a break tank for reaerating the water.

In the course of the discussion which followed Mr. H. P. Boulnois described this as a wonderful step in the direction of economy.

Mr. Rush Dixon (Woolwich) said the results of the system at Woolwich so far had been most satisfactory.

Mr. Chambers Smith (Sutton) considered that the system had a good deal to recommend it, but in his Council there was a good deal of objection to it; and Mr. Newton (Paddington) said that in a high-class neighbourhood, whether the system was good or not, a certain number of persons would be prevented from attending the bath unless it was known they were going to get clean water from the main.—Dr. Brown (Medical Officer for Bermondsey) said the sentimental objection was that the water was used over and over again. What was the harm in using water over and over again, provided it was cleansed in the interval?

A vote of thanks was accorded to Mr. Angel, who replied briefly.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, S.W., Mr. H. P. Harris, Chairman, presiding.

Loans.—Loans of 5,012*l.* were recommended to the Bermondsey Borough Council for granite paving works, and of 1,000*l.* to the Bethnal Green Guardians for reconstructing the drainage system at the Waterloo-road Workhouse.—That for Bermondsey was taken back.

Franco-British Exhibition.—The General Purposes Committee again reported to the effect that no action be taken for the erection of a pavilion at the Franco-British Exhibition to exhibit plans, models, and literature dealing with the work of the Council, the estimate for which was 4,710*l.*

Col. Probyn moved that a sum of not more than 4,000*l.* be expended on the erection of a pavilion, but this was rejected.

College Building at Avery-hill.—The Education Committee recommended that 6,700*l.* be expended on capital account in the acquisition of property for providing further hostel accommodation at the London County Council Residential and Day Training College.—Carried.

Sewer Work.—On the adjourned recommendation of the Main Drainage Committee to accept the contract of the Westminster Construction Company (203,417*l.* 1s. 2d.) for the construction of the middle level sewer No. 2, section B, Mr. Johnson moved that the matter be referred back for consideration as to whether the work should not be given to the Works Department.

Mr. E. Smith seconded the amendment, which was defeated.

Schools.—The Education Committee reported having approved plans for a proposed scheme of structural improvements at the Bolingbroke-road School, Battersea, the cost of which is estimated at 12,470*l.*—Plans had been received from the managers of the St. John's C.E. School, Russell-place, Blackheath, showing proposals for adapting the present premises pending the erection of new buildings on an adjacent site, and it was agreed to approve the plans on condition that a site be acquired within twelve months. The Board of Education have signified their approval of the following plans:—Alterations to cloakrooms at Christ Church School, Greenwich; alterations at South Hackney School; alterations to cloakrooms, St. James's School, West Islington; and to interchange of boys' and girls' departments at St. Andrew's School, East Marylebone.

Northampton Polytechnic Institute.—In July the Council voted 5,680*l.* towards the erection of a building in the courtyard of the Northampton Polytechnic Institute. The architect to the governors has now found it possible, by rearranging the ground plan of the proposed building, considerably to increase its capacity and to render it more commodious in other respects. The total cost will thus be increased to 9,000*l.* Having regard to the high value of the site of the polytechnic, the governors state that it appears to them desirable to utilise the space to the utmost, and had asked the Council to increase its grant so as to permit of the carrying out of the plans as altered.—It was recommended to make an additional grant of 3,320*l.*—This was opposed, and stood over.

Selected List of Contractors.—The name of Moorwood, Sons, & Co., Ltd., 30, Gray's Inn-road, was added to the list of contractors for heating apparatus.

London Motor Roadways Approach Bill.—The Parliamentary Committee, reporting upon this Bill, which contemplates the construction of a new roadway in the counties of London, Middlesex, and Buckingham for motor traffic, point out that this is the first proposal of its kind, and if the anticipation of the promoters that there was a public demand for such a roadway, and that there was a fair chance of the venture proving remunerative were to be justified by results, there could be little doubt but that many similar proposals would be put forward in the future. It became necessary, therefore, for the Council and Parliament to consider the broad question of principle whether roads of this character should be sanctioned. It might be urged on the one hand that this would be reverting to the old system of

turnpike roads long since abandoned, and that such a road, being in its nature more like a railway, would tend to check the development of the country through which it passed. On the other hand, such a road would undoubtedly prove of great benefit in relieving the ordinary roads of a class of traffic which did the greatest amount of damage to them. It would also tend to save dwellers near the existing roads from the nuisance of dust and the depreciation of their property caused by motor traffic. It might be urged that roads of this character ought only to be constructed by local authorities, but they doubted whether any such authority or combination of authorities would be willing or could prudently embark on such an undertaking which could only be regarded as of an experimental character. On the whole, after very careful consideration and after interviews with the promoters, the Committee had come to the conclusion, more particularly having regard to the shortness of the portion of the proposed road within the County of London, that the Council need not oppose the construction of the road on principle, and in this the Highways Committee, whose views they had ascertained, concurred.—It was decided, however, to continue opposition to the Bill with regard to various clauses.

Flood-preventing Works.—Plans for flood-preventing works were passed in respect of Lambs Wharf, Limehouse; Lavers Jetty, Nine Elms-lane; and Crown Wharf, Poplar.

Borough Polytechnic Institute.—Approval was given to eleven drawings submitted by Mr. Rowland Plumbe with regard to the extension of the Borough Polytechnic.

Tramways.—The offer of Messrs. Reid Brothers to lay cable ducts required for tramways over Putney Bridge at the rate of 23*s.* a lineal yard was accepted.

Holborn to Strand.—On the recommendation of the Improvements Committee it was agreed to let an area of 8,835 sq. ft., with a frontage of 102 ft. to Aldwych, to the General Accident Fire and Life Assurance Corporation at a rent of 2,650*l.* per annum.

Lord Elcho pointed out that for the first time an outside firm of surveyors had brought in business.

Bridge, Scrubs-lane.—An expenditure of 417*l.* was sanctioned for widening the bridge carrying the London and North-Western Railway over Scrubs-lane.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Lines of Frontage and Projections.

Fulham.—The erection of buildings on the southern side of Broughton-road, Fulham (Messrs. Gordon, Wilson, & Co. for Lond & Western, Ltd.).—Consent.

Hackney, North.—A house on the western side and a house on the eastern side of Mound-field-road, Hackney, with flanks abutting upon the southern side of Ravensdale-road (Mr. J. Ellwood for Mr. S. H. Barclay).—Consent.

Marylebone, East.—That the application of Messrs. Smee & Houchin for an extension of the periods within which the erection of a covered way to the proposed Mount Zion Chapel, on the northern side of St. John's Wood-road, St. Marylebone, was required to be commenced and completed, be granted.—Consent.

Fulham.—The retention of a conservatory at No. 41, Ellerby-street, Fulham, abutting upon Woodlawn-road (Mr. T. Hickman).—Refused.

Lewisham.—A motor-house at No. 43, Leyland-road, Lewisham, to abut upon Dorville-road (Mr. J. C. Thomas for Mr. Rollaston).—Refused.

Wandsworth.—An addition to the gantry in front of No. 58, Sunnyhill-road, Wandsworth (Messrs. Pasterfield & English).—Refused.

Width of Way.

Camberwell, North.—Retention of a factory building on the northern side of Medlar-street, Camberwell, with a forecourt boundary wall at less than the prescribed distance from the centre of the roadway of the street (Mr. F. R. Taylor).—Consent.

City of London.—A projecting one-story addition in front of No. 9, New Bridge-street, City, with a portion of such addition at less than the prescribed distance from the centre of the roadway of Bride-lane (Mr. A. F. Briggs for Mr. R. C. Gleed).—Consent.

Width of Way and Line of Frontage.

Wandsworth.—Buildings on the eastern side of Mitcham-road, Wandsworth, to abut also upon the southern side of Longmead-road (Mr. C. G. Baker for Mr. S. Sinclair).—Consent.

Lines of Frontage and Construction.

Kensington, South.—The retention of an iron and glass conservatory over the porch in front of No. 26, Queen's-gate, South Kensington (Messrs. Taylor, Lovegrove, & Co.).—Consent.

St. George, Hanover-square.—An iron and glass shelter at the proposed new restaurant entrance of the Berkeley Hotel, Piccadilly (Messrs. Forsyth & Maule for the directors of the Berkeley Hotel Company, Ltd.).—Consent.

Line of Frontage and Working-class Dwellings.

Norwood.†—Two intended dwelling-houses, to be inhabited by persons of the working class and proposed to be erected as an addition to the northern block of St. Saviour's almshouses, West Norwood, and to abut upon Hamilton-road (Messrs. H. Langston & Co. for the Corporation of Wardens of the Parish of St. Saviour, Southwark, at the County Hall).—Consent.

Space at Rear.

Whitechapel.—A deviation from the plans approved for the erection of buildings upon a site on the eastern side of Lolesworth-street, Whitechapel, to abut also upon Wentworth-street and Thrawl-street, so far as relates to an alteration in the planning at the corner next Thrawl-street and Lolesworth-street (Messrs. Dolley & Altman).—Consent.

Width of Way, Line of Frontage, Space at Rear, etc.

Kennington.—Van-sheds, stables, and a manager's house at Messrs. Birch Brothers' premises, Gasholder-place and Upper Kennington-lane, Kennington (Mr. P. Dollar for Messrs. Birch Brothers).—Consent.

Alteration of Buildings.

Bow and Bromley.—The uniting of Nos. 187 and 189, Roman-road, Bow, and the erection of a two-story addition at the rear of No. 187 (Messrs. G. Elkington & Son for Mrs. Levy).—Consent.

City of London.—The retention of openings in a party wall of a building on the eastern side of Temple-avenue, City, and abutting also upon the southern side of Tudor-street (Mr. H. M. Wakley for the Argus Printing Company, Ltd.).—Consent.

Holborn.—A modification of the provisions of sects. 74 and 77 of the Act, so far as relates to the proposed uniting at the second and third floor levels of Nos. 54 and 56, New Oxford-street, Holborn (Messrs. Woodrow & Helsdon).—Consent.

Rotherhithe.—No order with regard to the application of Messrs. Mather & Platt, Ltd., on behalf of Messrs. Champion & Slee, Ltd., for permission to use armoured doors in lieu of iron doors to party-wall openings at the premises of Messrs. Champion & Slee, Ltd., Church-street, Tower Bridge-road, Rotherhithe.—Agreed.

Formation of Streets.

Norwood.—Extension of time within which the roadways of proposed new streets for carriage traffic to lead out of the eastern side of Upper Tulse-hill, Norwood, were to have been defined and thrown open to the public as highways, and a deviation from the plan approved for the formation of the said streets (Messrs. Shaw & Lee for Messrs. G. H. Stringer and A. W. J. Stringer).—Consent.

Conversion of Building.

Greenwich.—The conversion into a dwelling-house of a stable abutting upon Nightingale-lane, at "Point House Club," The Grove, Blackheath (Mr. R. York).—Consent.

Dwelling-houses on Low-lying Land.

Bermondsey.—That a licence be granted under sect. 122 of the Act to Mr. T. Sloman for the re-erection of four dwelling-houses on low-lying land situated in Upper Grange-road, Bermondsey.—Consent.

Sealing.

Islington, South.—That the seal of the Council be affixed to the agreement in five parts entered into by the owners of the Marlborough Theatre with regard to the reservation of part of the land required to be dedicated to and left open for the use of the public as a condition of the Council's consents in connexion with the erection of the above-mentioned theatre.—Agreed.

The recommendation marked † is contrary to the views of the local authorities concerned.

BOOKS RECEIVED.

THE MODERN PLUMBER AND SANITARY ENGINEER. Edited by G. Lister Sutcliffe, A.R.I.B.A.. Divisional Vol. V. (The Gresham Publishing Company.)

SMITH'S "LAW OF MASTER AND SERVANT." Edited by G. F. Emery. (Effingham Wilson. 1*s.* 6*d.*)

THE COTTAGE HOMES OF ENGLAND. By W. Walter Crotch. (The Industrial Publishing Company. 1*s.*)

Architectural Societies.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.—The usual monthly meeting of the Council was held at 20, Lincoln-place on Monday, the 2nd inst., Mr. F. Batchelor, President, in the chair. A letter was read from the Architectural Association of Ireland stating that the Committee considered that it would be well to allow the condition, etc., of the prize annually presented by the Institute to the Association to remain as at present, as the Competition for it is better than for any other prize in the Association. It was decided to carry out the wishes of the Association. The names of three candidates for membership were dealt with, and a resolution of sympathy with the relatives of the late Mr. John Fawcett Gilchriest, of Sligo, a member of the Institute, was passed.

MANCHESTER SOCIETY OF ARCHITECTS.—The ninth general meeting of the students of this Society was held on Tuesday last, presided over by Mr. J. H. Sellers. Mr. F. B. Norris read a paper on "Michelangelo, His Works and Life," illustrated by lantern-slides. He began by giving a short description of the early life of Michelangelo, showing that he was a most temperate man, and also that he had a deep religious conviction. Mr. Norris next dealt with him as a sculptor, giving illustrations of his principal works; then as a painter, explaining that at this period of his life he was greatly harassed by his rivals, and also that he was in financial difficulties. The lecturer then gave an account of Michelangelo as an architect, giving extracts from different writers criticising his works at that time.

NOTTINGHAM ARCHITECTURAL SOCIETY.—The members of this Society held their annual dinner on the 24th ult. at the George Hotel. The President, Mr. W. D. Pratt, was in the chair. The Nottingham Master Builders' Association was represented by Messrs. Wm. Woodsend (President) and Mr. W. Edgar. Following the loyal toasts, Mr. A. E. Heazell proposed "The Master Builders' Association," to which Mr. Wm. Woodsend responded. Mr. W. Edgar gave the "Nottingham Architectural Society," which was responded to by Mr. W. D. Pratt.

HALIFAX ARCHITECTURAL SOCIETY.—On the 25th ult., under the auspices of the Halifax Architectural Society, an address on "Sculpture as Applied to Architecture" was given by Mr. T. Stirling Lee, of London. We had lost, said Mr. Lee, at the present time, the figurative language of sculpture. It was in the olden times the means of the expression of the greatest thought of the age, as well as of the history of the time. We had lost the means of interpreting it, and the gain would be incalculable could we but understand the figurative language which was written on ancient buildings. There were three histories of those as of all other times. The history of books, the history of deeds, and the history of art. Of these the last was the truest. Art could be nothing but the outcome of the environment in which it lived. The loss of the language was one of the greatest losses a nation could sustain. It had come about through the introduction of printing. This had done away with the need of writing symbolically upon the walls. If someone wrought some great thought in sculpture to-day on the walls of the Halifax Town Hall, how many people would stop and endeavour to read it? Sculpture was now mainly the medium of preserving the recollection of famous men who were dead, so much so that they were called the sculptors of the dead. Mr. Lee was warmly thanked at the close for his address.

EAST GRINSTEAD.—The East Grinstead Rural Council have appointed Mr. A. Brooker Assistant Surveyor.

Engineering Societies.

JUNIOR INSTITUTION OF ENGINEERS.—On Saturday, February 22, a visit was paid to King's College, London, for an inspection of the experimental apparatus, etc., in the Engineering Laboratory, the Siemens Electrical Engineering Laboratory, and the Wheatstone Laboratory. The apparatus includes various machines for testing materials and obtaining a thorough knowledge of their nature and properties; for thermodynamic work there are a 60-i.h.p. Marshall experimental compound engine, 20-k.w. Belliss Siemens direct-driven set, Parsons steam turbine, and direct-driven dynamo, Davey Paxman & Babcock Wilcox boilers, Dowson suction-gas plant, Crossley high-speed gas-engine, condensing plant, various calorimeters, apparatus for flue and exhaust gas analysis, etc. Appliances are also provided for the determination of the cutting power of tools, and efficiency of machine tools and belts and pulleys, and apparatus for determining the effect of blows on springs, and the resisting power of ashphalt. The Siemens Laboratory is equipped with very complete and modern apparatus suitable for the practical instruction of students in every branch of electrical engineering. Direct current is obtained from the supply company's public mains, from a battery of chloride cells, and from a Siemens 50-k.w. generator of 500 to 550 volts. Alternating current is supplied from a Siemens 100-k.w. eight-pole revolving field type of alternator arranged to give one, two, or three phase currents at frequencies ranging from 50 to 25; also from two Siemens generators, each of 10-k.w. output, with a special coupling which allows the phase displacement of the armatures to be altered. A complete tramcar equipment is provided, fitted with two 35-h.p. motors, with arrangements for testing draw-bar pulls, efficiencies, etc. In the Wheatstone Laboratory were shown the dark room for optical experiments, workshops for repairs, the celebrated George III. and Wheatstone collections, which include the Lodestone which belonged to Daniell, and was used by Faraday in his classic experiments on the induction of currents; the coils of insulated copper-strip used by Henry in his experiments; the rotating mirror which Wheatstone employed in his experiments on the velocity of electricity along wires; the original Wheatstone bridge and resistance-boxes; and Clerk Maxwell's dynamical model to illustrate the induction of electric currents.

Competitions.

PROPOSED NEW CITY HALL, PERTH.—Perth Town Council held a special meeting on the 27th ult. for the purpose of selecting a plan for the erection of a new City Hall, which is to cost 25,000*l*. There were 136 plans, and Mr. J. J. Burnett, architect, Glasgow, acted as assessor. The Council unanimously adopted Mr. Burnett's report, which placed No. 93 first. On the envelopes being opened it was found that the successful plan was by Mr. H. E. Clifford, 225, St. Vincent-street, Glasgow. The premium prizes of 50*l*., 30*l*., and 20*l*. respectively went to Messrs. Stewart & Paterson, 14, Blythswood-square, Glasgow; Messrs. Campbell, Douglas, and A. N. Paterson, 266, St. Vincent-street, Glasgow, the plans submitted being prepared by Messrs. Alex. N. Paterson and J. A. Campbell; and A. D. Hislop, 124, St. Vincent-street, Glasgow, respectively.

COLCHESTER ROYAL GRAMMAR SCHOOL.—Mr. T. G. Jackson, R.A., the assessor appointed to advise upon the plans and designs submitted, has made his award as follows:—First place, design No. 4; second place, design No. 17; third place, design No. 2. The designs placed by the assessor were found to have been submitted by:—No. 4, Messrs. Newman, Jacques, & Round, 2, Fen-court, Fenchurch-street; No. 17, Messrs. Spalding & Spalding, of King-street, Cheapside; No. 2, Messrs. Goodey & Cressall, Colchester. Nos. 10 and 12, which were respectively submitted by Messrs. Brown & Burgess, of Ipswich, and Mr. T. H. Baker, of Colchester, were commended. The designs and plans will be placed on view at the Town Hall, Colchester, on Monday and Tuesday next, between the hours of 9 and 6.

RADCLIFFE TOWN HALL.—Mr. F. Willoughby, F.R.I.B.A., has made his award in this competition, which has been accepted by the Radcliffe Urban District Council. The following is the order:—1, Mr. W. M. Gillon, 66, Deansgate, Manchester; 2, Mr. D. Bird, 7, Brasennose-street, Manchester; 3, Mr. H. Lord, 42, Deansgate, Manchester; 4, Messrs. Gilling & Moorhouse, Liverpool. The new municipal buildings are estimated to cost 12,000*l*. There were fifty-four sets of drawings submitted for competition.

Correspondence.

DRY ROT.

SIR,—The article upon dry rot in your issue for February 22 is interesting and, on the whole, correct.

Your contributor, however, says that the "warmth of the pipes drew moisture out of the earth, and the resulting damp produced dry rot in the billiard-room flooring." The damp did not produce the rot, but the moist, still, and equably-warm atmosphere produced by the pipes under the floor was favourable to spore germination, and development of the vegetative portions of the fungus, as it would have been to other species of fungi. There is also one important point which your contributor has omitted, that is, that all wood shavings, scraps of wood, etc., should be removed from under the floor before the boarding is put on. It is well known that fungi are more abundant in those woods in which dead branches, twigs, etc., are allowed to lie than in those from which they are regularly removed.

C. F. INNOCENT.

The Student's Column.

REINFORCED CONCRETE BEAM FORMULÆ.—VIII.

RECTANGULAR BEAMS WITH SINGLE REINFORCEMENT.

(38.) *Derivation of the Formulæ.*—When steel is applied in a concrete beam for resisting tension only, the beam is said to be provided with *single reinforcement*.

In this section we deal only with reinforcement in the form of straight bars laid parallel to the lower surface of the concrete.

Let Fig. 7 represent the cross-section of a rectangular beam of any dimensions where the reinforcement consists of a round steel bar placed at a suitable distance from the lower surface of the concrete.

The stresses in the reinforcement may be regarded as being of uniform intensity and as acting at the centre of gravity of the bar.

In cases where two or more bars are disposed in one or two rows the stresses are regarded as acting at the centre of gravity of the group of bars.

In accordance with assumption (6) sect. (36), nothing is allowed for the resistance of the concrete below the neutral axis, and consequently the reinforcement must be proportioned to withstand the total tensile stresses due to bending moments.

In this and all subsequent series of formulæ for rectangular beams the ratio ρ of the area of steel is taken in respect of the area bh.

Let Fig. 8 be the stress diagram in a part longitudinal section of the beam represented in Fig. 7.

Then, as t_s = tensile stress intensity in the steel (Fig. 8), and ρbh = area of steel (Fig. 7), the total tension is

$$T_s = t_s \rho bh$$

Compressive stresses above the neutral axis are resisted by the concrete in the area bhx (Fig. 7).

If c_c = extreme fibre compressive stress intensity in the concrete and $\frac{1}{2}\,c_c$ the mean compressive stress intensity in the concrete throughout the area bhx, the total compression is

$$C_c = \frac{c_c}{2}\,bhx$$

The internal forces T_s and C_c form a couple, one force being the total tension in the steel acting through the centre of gravity of the bar or bars, and the other force being the total compression in the concrete acting through the centre of gravity of the triangular stress area indicated in Fig. 8.

The two forces act in opposite directions, as shown by the arrows in Fig. 8, and to comply with the conditions necessary for equilibrium they must be equal.

Moreover, the moment of resistance M_r of the couple must be equal to the bending moment M_b due to the total load on the beam, including the applied load and the weight of the materials themselves.

The moment of resistance is determined by taking moments about the centre of compression in the concrete, using for the force the total tension in the steel, or by taking moments about the centre of tension in the steel, using for the force the total compression in the concrete.

Thus, as by Fig. 8 the arm of the couple is $h - \frac{1}{3}\,hx = h\left(1 - \frac{x}{3}\right)$ we have

$$M_r = T_s h\left(1 - \frac{x}{3}\right)$$

$$= C_c h\left(1 - \frac{x}{3}\right)$$

These expressions for the moment of resistance are far more simple than some in which moments are taken about the neutral axis, a method which has the effect of complicating calculations without any corresponding advantage.

Let Fig. 6 (*ante*) represent strains in a part longitudinal section of the same beam, where λ_c = the deformation of the extreme fibres of concrete in compression and λ_s = the deformation of the steel in tension.

Then, bearing in mind assumption (4) sect. (36) that a plane section remains plane during bending, we have the relation:—

$$\frac{\lambda_s}{\lambda_c} = \frac{h(1-x)}{nx}$$

But as

$$\lambda_s = \frac{t_s}{E_s} \text{ and } \lambda_c = \frac{c_c}{E_c}$$

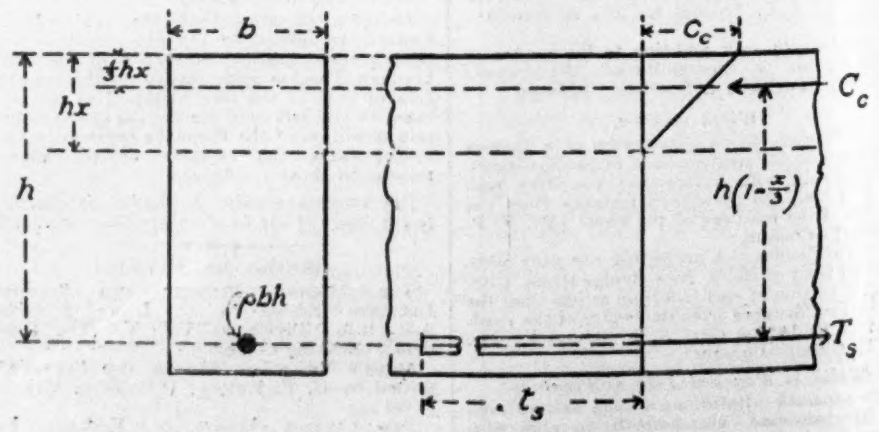

FIG. 7. FIG. 8.

we have

$$\frac{t_s}{E_s} \div \frac{c_c}{E_c} = \frac{h(1-x)}{hx}$$

or denoting $\frac{E_s}{E_c}$ by the symbol m

$$\frac{t_s}{c_c m} = \frac{h(1-x)}{hx}$$

In these formulæ we deal wherever possible and convenient with ratios instead of with absolute measurements.

Therefore, we have to find an expression for the value of the ratio x by which the position of the neutral axis, and consequently the values of hx and $h(1-x)$, can be determined.

For this purpose we can eliminate h from the foregoing equation and write

$$\frac{t_s}{c_c m} = \frac{1-x}{x}$$

Whence we obtain

$$x = \frac{1}{1 + \frac{t_s}{c_c m}} \quad . \quad . \quad . \quad . \quad . \quad . \quad (1)$$

$$c_c = t_s \frac{x}{(1-x)m} \quad . \quad . \quad . \quad . \quad . \quad (2)$$

$$t_s = c_c \frac{(1-x)m}{x} \quad . \quad . \quad . \quad . \quad . \quad (3)$$

We have already shown that the forces T_s and C_c must be equal.

Consequently

$$t_s \rho bh = \frac{c_c}{2} bhx$$

Then as the ratio ρ and not the area ρbh is here considered, we cancel the quantity bh from each side of the equation which becomes

$$t_s \rho = \frac{c_c x}{2}$$

Substituting the value of x as obtained in (1) we get

$$t_s \rho = \frac{c_c}{2} \frac{1}{1 + \frac{t_s}{c_c m}}$$

and

$$\rho = \frac{1}{\frac{2t_s}{c_c}\left(1 + \frac{t_s}{c_c m}\right)} \quad . \quad (4)$$

Substituting the value of c_c found in (2) we have

$$t_s \rho = t_s \frac{x}{(1-x)m} \cdot \frac{x}{2}$$

and cancelling out the factor t_s in each term, we obtain

$$\rho = \frac{\frac{x}{(1-x)m} \cdot \frac{x}{2}}{\frac{x^2}{2m(1-x)}} \quad (5)$$

whence

$$x^2 + 2m\rho x - 2m\rho = 0$$

$$x = \sqrt{(m\rho)^2 + 2m\rho} - m\rho \quad . \quad (6)$$

and

$$x = m\rho\left(\sqrt{1 + \frac{2}{m\rho}}\right) - 1 \quad . \quad (6a)$$

It should be observed that (6) is identical with the corresponding equation of the British Reinforced Concrete Committee, and that the only difference between its alternative form (6a), and the corresponding equation of the Prussian Government Regulations is that in the latter the distance hx of the neutral axis from the top surface of the beam is directly determined by retention of the factors bh in the expressions for the tensile and compressive forces respectively.

Following the standard notation in Table V., the Prussian formula reads

$$hx = \frac{m\rho bh}{b}\left(\sqrt{1 + \frac{2b}{m\rho bh}} - 1\right)$$

and after cancellation of the factors b and h it is identical with formula (6A).

We have already shown that the moment of resistance is

$$M_r = C_c\left(1 - \frac{x}{3}\right) = T_s h\left(1 - \frac{x}{3}\right)$$

Therefore, substituting the values of T_s and C_c we have :—

Taking moments about the centre of tension in the steel

$$M_r = \tfrac{1}{2} c_c x b h^2\left(1 - \frac{x}{3}\right)$$

$$= bh^2\left[\tfrac{1}{2} c_c x\left(1 - \frac{x}{3}\right)\right] \quad . \quad (7)$$

Taking moments about the centre of compression in the concrete

$$M_r = t_s \rho b h^2\left(1 - \frac{x}{3}\right)$$

$$= bh^2\left[t_s \rho\left(1 - \frac{x}{3}\right)\right] \quad . \quad . \quad (8)$$

(39.) *Equation of Bending and Resisting Moments.*—From the theoretical standpoint the moment of resistance is always equal to the bending moment at any section of the beam,

or

$$M_r = M_b$$

In practical construction the moment of resistance must be much greater than the bending moment so as to provide for a sufficient factor of safety.

Fromulæ (1) to (8) are intended to be used in connexion with such stress intensities for both concrete and steel as will provide a factor of safety of 4 in respect of the ultimate strength of the concrete in compression, and a factor of safety of 2 in respect of the elastic limit of the steel in tension.

THE BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

On the 25th ult. this Institution held its forty-first annual general meeting for presenting the report and balance-sheet of the past year, and electing officers for the present year, at 21, New Bridge-street, E.C., with Mr. W. F. Wallis, President, in the chair.

The Report showed an income of 750*l.* for the year, received in donations and subscriptions. The expenditure had been 729*l.* 10s. to thirty annuitants, and 25*l.* had been disbursed as temporary relief.

Mr. Wallis, in moving the adoption of the report and balance-sheet, expressed his pleasure at the financial success of the annual dinner, and his regret that the donations were so short; also that the deposit amount of 100*l.* had had to be withdrawn to meet the calls of the Institution's deserving cases. He felt that doubtless his being a country builder had perhaps been partly the cause of metropolitan donations being less handsome than had been hoped.

Mr. O. Newling, in seconding, complimented Mr. Wallis on his good work for and interest in the Institution, and congratulated the Committee on the acceptance of office by Mr. E. C. Hannen, as he felt sure that that gentleman would make an excellent President.

Replying to the vote, thanking the retiring officers, Mr. Wallis referred to the excellent help he had had from the Committee. He had been much impressed by the businesslike way the affairs of the Institution were carried out, and they were lucky in having secured such an estimable Secretary as Mr. Austin.

Mr. Hannen, having been inducted, expressed his interest in the Builders' Clerks' Benevolent Institution and its aims.

COURT OF COMMON COUNCIL.

A meeting of the Court of Common Council was held at the Guildhall on Thursday last week, the Lord Mayor presiding.

Southwark Bridge.—Mr. Horace Green asked the Chairman of the Bridge House Estates Committee whether there had actually been any negotiations between the Corporation's engineers and the London County Council with respect to the rebuilding of this bridge. Mr. Deputy and Under-Sheriff Algar said he had been unable to trace any negotiations, and replying to further questions stated that their Engineer (Mr. Sumner) was in no way concerned with the so-called negotiations, and that he had received from Mr. Matt, the expert who had been consulted by the Committee, a letter to the effect that no preliminary verbal negotiations had been entered into between him and the Engineer to the London County Council.

Women Sanitary Inspectors.—A report was presented by the Sanitary Committee recommending that a third woman sanitary inspector be appointed at a commencing salary of 120*l.* per annum, rising by annual increments of 10*l.* to a maximum of 150*l.* per annum. Deputy Sir Robert Rogers protested against the appointment of another woman inspector. A man, he said, could do the work better without being the nuisance that women were with their fads and fancies in connexion with sanitary work. As an amendment he moved that the report should be referred back for reconsideration, in order that the Committee might appoint a male inspector. In the course of the discussion which followed, Mr. Redding pointed out the disadvantages a male inspector suffered under when dealing with buildings in which large numbers of women were employed, and Mr. Stapley, while prepared to admit that women inspectors might be more trying, thought, nevertheless that they were most useful. The whole question was eventually referred back to the Committee for reconsideration.

Proposed Alterations at the Guildhall.—The City Lands Committee brought up a report relative to the necessity for further accommodation at Guildhall for the official staff in connexion with the City of London (Union of Parishes) Act, submitting a scheme for new offices on the north side of Guildhall, involving the demolition of the old Council-chamber, and asking for authority to proceed further in the matter, and to bring up an estimate of the expenses involved. It was agreed to defer consideration of the matter until the next meeting.

Institution of Cleansing Superintendents.—The Lord Mayor laid before the Court an application from the President of the Institute of Cleansing Superintendents of Great Britain and Ireland for the use of the Guildhall for the annual conference to be held in London on June 30 and July 1 and 2. The application was granted.

THE BUILDERS' FOREMEN AND CLERKS OF WORKS' PROVIDENT INSTITUTION.

The annual dinner of this Institution was held in the King's Hall, Holborn Restaurant, on Saturday last week, and, as usual, was very largely attended, no fewer than 550 being present. Mr. G. Bird Godson presided, and was supported by Mr. E. Monson, Mr. W. Lawrance (President of the London Master Builders' Association), Mr. F. L. Dove, L.C.C., Messrs. B. Carter, T. Costigan, H. T. A. Chidgey, etc. The Dinner Committee were Messrs. J. Beer, E. Flindall, W. G. Ramplin, A. C. H. Pendlebury, J. Stapleton, and F. Hann, Hon. Secretary.

The Chairman, in proposing "The Provident Institution of Builders' Foremen and Clerks of Works," expressed his pleasure that so large a company had assembled to honour a most deserving institution, the object of which was to render assistance to those who required it and were unable to help themselves. Perhaps he was hardly justified in saying they were unable to help themselves, because the very fact that they were members of the Institution was practical proof that they had helped themselves and also afforded help to others. The Institution was provident in name, provident in its object, and provident in its management. With regard to the last point, he knew of no society which could boast of being so economically managed as this one was by the Committee and the energetic Secretary, Mr. Hann. He came there that night in a mercenary spirit to seek their help. So far, his list had been well subscribed to, but not so well as he anticipated.

Mr. John Beer (Corresponding Secretary), in replying, said there was no other institution in the kingdom from which members received more value for their money. If over a long period a member paid 40*l.* into the Society and then fell on bad times and was placed on the pension list, in one year he would get back all he had paid in. There were twenty-five persons now on the list who had paid in about 750*l.*, but they had already received between them 3,500*l.*, which was five times more than they had paid in. Of course, the contributions which the members themselves paid in would not be sufficient to enable so much to be done, and consequently they had to depend upon the generosity of those interested in the trade to furnish them with the means to carry on such a good work. He regretted to say that this year a number of their old subscribers had halved their subscriptions, not because they valued the society less, but because of the bad times and keen competition. Those connected with the society realised the difficulties, but at the same time they appealed for help for an institution which for fifty-five years had carried on such a good work.

Mr. W. Lawrance, in proposing the toast of "The Architects and Surveyors," remarked that there never was a time when a member of one body could say he had no need of the members of another body, and a meeting like that emphasised the fact of how completely their interests were identical—the interests of the profession and the interests of the trade. As Englishmen they were exceedingly proud of their ancient buildings. They wandered into old abbeys and thought of the monks and men who wrought so well and truly and so slowly in the old days, and when they surveyed the solemn grandeur of St. Paul's Cathedral they thought of Sir Christopher Wren working for years on that building for a mere pittance. They were glad to think that in these days there were still architects of genius able to carry out great works, equal in importance to those built in the past. Only second in importance to the architect was the surveyor. A wise

man sat down to consider the cost before he started to build, and it was the surveyor who came in and advised him then.

Mr. E. Mouson, in response, said it was a big task to speak for the architects of London, but on coming into the room he found he was known to many present. He had known the Chairman ever since he had come into the trade, and always honoured the firm of Godson. He found also that Mr. Hann was connected with a building of which he was the architect twenty years ago. Speaking as an architect he might say there was no greater charm after designing a building than to see it gradually grow into actual existence, and there was no doubt that in all buildings the nearer the builder and architect could get together the better for all parties. It had been said that there was no good building without a good architect, and certainly there was no good architecture without a good builder. The architect's profession could not be learned simply in an office, but the young architect must go into the builder's yard, and, if possible, must be a clerk of works himself. He must see the way in which the work was done and the methods which were best adapted for carrying out a building. Many a man could make a pretty design on paper, but unless he had practical experience he could not make the working drawings in such a way that the builder could carry out the idea in his mind. Buildings were now erected much more quickly than they used to be, and he did not know that this was altogether for the benefit of the building. In days gone by a building took years to erect, but now people wanted to occupy the building before it was finished, and everything was rushed. Many people did not understand the difference between an architect and a builder, although in olden times, of course, the master builder was the architect. He remembered a story of a man in the Law Courts to whom counsel said: "Well, Mr. Builder, what do you say to this?" And the witness replied, "I am not a builder; I am an architect." "I do not know," said counsel, "that there is much difference between the two, but perhaps you can tell me who was the architect for the Tower of Babel?" The answer was, "There was no architect, hence the confusion." Well, the architect's business was not merely to draw the designs, but to see the building carried out, and it was in doing this that he came into contact with the builder's foreman. There were also shop foremen and general foremen, and the architect was indebted to all of them for the good work they did. Nowadays, builders' formen and clerks of works were expected to know a great deal, and although he personally regretted that the old apprenticeship system had died out, still young men could now learn a great deal at technical schools. A good foreman was worth his weight in gold to the builder.

Mr. Chidgey, of the Quantity Surveyors' Association, also acknowledged the toast, and expressed his pleasure at seeing foremen and clerks of works foregather together. Although on the building they might be full of integrity for their respective employers' interests, yet that gathering afforded the chance of meeting together to assist a good work.

Mr. Hann announced that the list of subscriptions totalled over 350*l.*, including 25 guineas from Messrs. G. Godson & Sons. This was slightly in excess of last year's total, but there were quite fifty more subscribers.

Mr. A. Ritchie, in proposing "The Builders and Contractors," urged on those present the importance of supporting such a society, and remarked that the builder who laid the foundations of Netley Hospital and the widow of the builder of Lancaster Gate eventually came upon the funds of the Master Builders' Benevolent Institution. One never knew when misfortune would arise. In regard to the toast he thought perhaps "contractors" better expressed builders, for there were different kinds of builders, and some were notorious as jerry-builders.

Mr. W. Lawrance, who replied as the representative of the London Master Builders' Association, said that that Association had done immense work in the last few years in consolidating the interests of the trade. There had been many opportunities of meeting with the men in a conciliatory spirit, and they had proved over and over again that this was a much better way of arranging things than resorting to the suicidal policy of strikes and lock-outs. They were, without doubt, experiencing bad times in the building trade, but went on in the hope of better times. He would have liked Mr. Dove, the ex-President of the Association to have replied inasmuch as during his year of office, which had only just terminated, he had had to adjudicate on many difficult questions for which the Association and the builders of London generally were grateful to him.

Mr. F. Hann submitted the toast of "The Governor, Trustees, Donors, Subscribers, and Visitors," and referred to Mr. F. J. Dove, the Governor, as the Grand Old Man of the trade. It was a long time since they had seen him at these dinners, but he was well represented by his son, Mr. F. L. Dove. Their two other trustees, Mr. J. Howard Colls and Mr. T. Costigan, were also names honoured in the trade. With regard to the donors and subscribers he would like to say that it was only due to the hard work of the Chairman that they had done so well that night.

Mr. F. L. Dove, in reply, said he was proud of the fact that the Governor was his father. As to the remarks of Mr. Ritchie, he did not agree that they should be called contractors instead of builders. He considered the name of builder was one to be proud of, and would like to see it stuck to much more in the trade.

Mr. Ben Carter, replying for the donors and subscribers, said that actions spoke louder than words, and he congratulated the Chairman on the result.

The toast of "The Chairman," proposed by Mr. T. Costigan, completed the list.

METROPOLITAN WATER BOARD.

At the fortnightly sitting of the Metropolitan Water Board on Friday last week a return was submitted showing expenditure on works to date and estimated further expenditure. Building works at Willesden, Sunbury, Anwell Marsh and Park, are estimated to cost 429*l.*, and fencing 350*l.*

Works at Walton.—The Works Committee reported that they were informed by the Deputy Chief Engineer that the approximate cost of the construction of the works at Walton, including the engine and boiler-houses, main-laying, etc., would probably amount to 129,653*l.*, as against the estimate of 105,000*l.* passed by the Board. The sum was made up as follows:—Engine and boiler-house, 70,000*l.*; add for extras, 3,500*l.*; cost of engines, 49,653*l.*; extras, 1,500*l.*; estimated cost of laying mains, etc. 3,000*l.*; machinery for workshops, 2,000*l.*

New Mains, etc.—It was agreed that in connexion with the proposed construction of tramways in Finchley and Hendon to divert certain mains, and also to take advantage of the opportunity of laying larger-sized mains to provide for future requirements, and to avoid breaking up the road in future. The cost of the work is 4,295*l.* Similar work was also agreed to be done in the Harrow-road in connexion with tramway construction by the London County Council at a cost of 3,056*l.*

Supply at Tottenham.—In order to finally complete the arrangements for the Tottenham supply, it was agreed to construct a connexion with the eastern district by a main in High Cross, estimated to cost 1,020*l.*

METROPOLITAN ASYLUMS BOARD.

At the fortnightly meeting of the Metropolitan Asylums Board on Saturday the following matters were dealt with:—

Correspondence.—A letter from the Local Government Board approving of the plans for providing a building at the Central Stores adaptable either as a motor-house or stable buildings was reported. The London District of the Municipal Employees Association had written asking that an increase of wages be granted to all staff carpenters employed by the Board, and that a uniform number of working hours, not to exceed 50½ per week, be fixed.

Bacteriological Laboratory.—The Finance Committee submitted the revised estimate of the cost of the bacteriological laboratory, viz.:—Amount of tender, 5,504*l.*; gas and water mains, 86*l.*; architect's charges, 300*l.*; quantity surveyor's charges, 100*l.*; clerk of works' salary, 120*l.*; contingencies, 6,366*l.* It was resolved to ask the sanction of the Local Government Board to incur the expenditure.

Entrance Lodge, Millfield.—The same Committee reported the following estimate for this building:—Cost of building, 390*l.*; clerk of work's wages, 50*l.*; contingencies 20*l.*; total, 460*l.* The sanction of the Local Government Board to the expenditure will be asked.

Central Stores.—Messrs. Northcroft, Neighbour, & Nicholson, of 9, Regent-street, were appointed to measure up the variations on the contract of Charles Wall, Ltd., for the erection of the new central stores building at Peckham Rye, at the rate of 2½ per cent. on the additions, and 1½ per cent. on the omissions.

Joyce Green Hospital.—In July the managers accepted the tender of Mr. A. N. Coles, of New Town-chambers, Plymouth, for the erection, at the sum of 4,713*l.*, of a goods' reception station, gate porter's lodge, and eight staff cottages at Joyce Green, in accordance with the plans prepared by Messrs Treadwell & Martin. Upon application being made to the Local Government Board for their sanction to the necessary expenditure in connexion with these works, they stated that, whilst they were prepared to issue an order authorising the proposed expenditure on the goods' reception station and porter's lodge, they were not prepared to sanction so heavy an expenditure as 3,042*l.* on the erection and drainage of the block of eight cottages, and asked the Managers to reconsider the matter with a view to reducing the cost of this portion of the scheme. As the result of further consideration the architect had prepared the revised plans for seven cottages, and for the alteration of an existing cottage. Certain things were omitted, and the cost would be 2,190*l.* instead of 2,953*l.* It was agreed to ask the Local Government Board to approve of the amended plans.

Leavesden Asylum.—A plan was submitted by the Engineer-in-Chief for the conversion of two female blocks and of one male block at the Asylum into infirmary blocks, at a cost of 1,050*l.* The amount included the cost of new baths and fittings, estimated at 210*l.*, the order for which it was suggested should be placed with Messrs. Doulton & Co. Subject to the Local Government Board giving its sanction, it was agreed to carry out the works.

Cleaning and Painting Works.—It was reported that Mr. M. McCarthy's contract at Tooting Bec Asylum had been extended by 150*l.* for cleaning and painting, and it was further resolved to spend 453*l.* on cleaning and painting at Caterham Asylum, and 160*l.* at Bridge Industrial Home.

Obituary.

MR. D. R. DALE.—Mr. Daniel Robert Dale, architect, of Addiscombe, Croydon, died on Saturday, the 29th ult., aged 71, in the house built for his own occupation. Mr. Dale was a Londoner of Londoners, born in Coventry-street in 1837, educated at Edmonton, articled to Mr. Blore, of Brompton-road, engaged largely in the development of Kensington. He was for a number of years partner of the late Mr. James Tolley, architect of many banks, etc., and District Surveyor for Sydenham; this partnership was dissolved about 1877. He was appointed in 1882 District Surveyor for West Streatham, an office which he resigned last year. Mr. Dale was elected F.R.I.B.A. in 1882. He designed and carried out many buildings in town and country, among them the very extensive Butler's Wharf, Tooley-street; premises of Mr. Ince Furrier, in Oxford-street; City and Midland Bank, in Bedford-street and Tottenham Court-road, etc. He was elected 1889 member of the Court of Common Council of the City of London for the Ward of Billingsgate; served on the Bridge House Estates and the Music and Central Markets Committee. He was also a member of the Streets Committee of the Commissioners of Sewers and of the Irish Society. In 1892 he took his pupil, Mr. A. F. Gadsdon, into partnership. He retained to the last (from 1893) the surveyorship of the London estates of the Bishopsgate Foundation. Mr. Dale, who leaves a widow and four children, was buried on March 4, 1908, at Shirley, a large number of relatives and friends attending in the church and at the graveside.

MISS GRANT.—The death is announced of Miss Mary Grant, sculptor. Miss Grant was a daughter of the late Mr. John Grant, of Kilgraston, and niece of Sir Francis Grant, P.R.A. After having studied under Gibson at Rome, and Mercié at Paris, she entered Foley's studio in London. She executed the alto-relief portrait for the Women's Memorial to Professor Fawcett in Victoria-embankment Garden, which is illustrated in the *Builder* of November 27, 1886; figures for the porch, Lichfield Cathedral; and the reredos, St. Mary's, Edinburgh; and that of Izaak Walton for the screen in Winchester Cathedral. Miss Grant also sculptured busts of Sir Francis Grant, for the Royal Academy; Dean Stanley, for the private chapel at Windsor; Albert, Prince Consort; Queen Victoria, for the Rajah of Kapurthala; and the late Duke of Argyll. During many years past she contributed specimens of her work to the Royal Academy exhibitions.

General Building News.

CHURCH EXTENSION, LONGRIDGE.—The congregation of St. Wilfrid's Church, Longridge, are carrying out a scheme for the completion of their church in Pitt-street, at an estimated cost of 3,000*l.* Mr. Withnell is the architect of the work, and Mr. W. Almond the contractor. The work will be executed throughout in Longridge stone.

COUNCIL SCHOOL, JERSEY MARINE, SWANSEA.—A Council school has been erected at Jersey Marine, near Swansea. The new building provides accommodation for ninety scholars. The

site is ½ acre in extent, and provides for separate playing-grounds. The contractor was Mr. P. Gaylard, of Bridgend, and Mr. Fry acted as clerk of works. The school was designed by and carried out under the superintendence of Mr. W. James Nash, County Education Architect for the western division of Glamorganshire.

COUNCIL SCHOOL, SYKEHOUSE, YORKS.—A new County Council school has been erected for the parish of Sykehouse. The school is designed to accommodate 150 children. The structure is of brick, and roofed with red tiles, the gables being treated with half-timber work. There are three classrooms, with a wide corridor which gives access to them, and cloakroom and lavatory accommodation is provided for the two departments. The work has been carried out by the Architect to the West Riding Education Authority.

SECONDARY SCHOOL FOR GIRLS, HUDDERSFIELD.—The foundation-stone has just been laid of a new secondary school for girls in Greenhead-road, Huddersfield. The contractors are Messrs. Law, Stead, & Sons, the plans having been prepared by the Borough Engineer, Mr. K. F. Campbell. The cost of the building, furnishing, and streetage charges is estimated at 12,500*l.*

COUNCIL SCHOOL, BRYMBO, DENBIGH.—Plans have been prepared by Mr. W. D. Wiles, County Architect, for a new Council school which the education authority proposes to erect at Brymbo. The proposed school is to accommodate 538 children—380 mixed children, accommodated in seven classrooms, and 158 infants, accommodated in three classrooms.

REBUILDING IN MARYLEBONE.—The residential flats recently erected along the two sides of Glentworth-street, Dorset-square, are being extended southwards, on the west side, so as to present a long frontage to the north side of New-street, towards Dorset-square. The contractors for the work are C. Wall, Ltd.; the architects are Messrs. Hudson & Hunt, whose designs continue those they prepared for the earlier blocks in Glentworth-street.

PROPOSED NEW CHILDREN'S HOSPITAL, BIRMINGHAM.—At the annual meeting of subscribers to the Birmingham and Midland Children's Hospital on the 24th ult., the Committee of Management reported that Mr. F. W. Martin had been appointed architect for the new hospital which it is proposed to erect on a site fronting Ladywood-road.

PROPOSED ENLARGEMENT AT THE MANCHESTER EXCHANGE.—An important scheme of extension of the Manchester Royal Exchange was outlined at a recent meeting of the proprietors held in the Accountants' Hall, Spring-gardens. The scheme provides for extending the present building across Bank-street, and it is estimated to cost half a million. The full consideration of the proposals has been deferred to March 16. Mr. Murgatroyd is the architect of the directors.

HOSPITAL EXTENSION, BOURNEMOUTH.—The foundation-stone of the eastern extension of the Royal Victoria Hospital, a building which is to be situate in the Lowther-road, was laid a short time ago. The extension will form part of a scheme which will eventually provide a hospital of 100 beds, with all the necessary additions of administration block, etc. The present building, which will form the administration block of the completed scheme, will be two stories high, constructed of red brick with Portland stone dressings. The architects are Mr. W. A. Pite and Messrs. Creeke, Gifford, & Oakley, of Bournemouth, the Dean Estate architects. Messrs. Jenkins & Sons are the builders, and the contract price is 5,600*l.*

CHURCH RESTORATION, KEMPSTON.—St. John's Church, Kempston, was recently reopened after undergoing considerable restoration, including the reconstruction of the chancel. The work was carried out from the plans of Mr. Temple Moore, architect, and the contract was put into the hands of Mr. Samuel Foster. The cost is estimated at about 1,083*l.*

PARISH HALLS, EDINBURGH.—Plans have been passed by the Edinburgh Dean of Guild Court for halls in connexion with Lady Glenorchy's Parish Church. The new buildings will stand on a site at the corner of Drummond-street and Roxburgh-place, and will consist, for the most part, of two large halls, constructed to hold about 500 people each. It is also proposed in the scheme to erect a new church in place of the existing one, but meantime only the halls will be proceeded with. The architects are Messrs. M'Gibbon & Ross, Edinburgh.

MEMORIAL HALL, CARLISLE.—The Richmond Memorial Hall, which has been erected in Fisher-street in connexion with St. Mary's Parish, his just been opened. The hall has been built from the designs of Mr. J. H. Martindale, architect, Carlisle, at a total cost, including the purchase of the site, of about 2,400*l.* The work has been executed by the following firms:—Messrs. William Baty & Son, West Walls, builders; Messrs. Reed & Sons, joiners; Messrs. R. M. Hill & Sons, plumbers; Messrs. Ferguson & Son, plasterers; Messrs. Stephenson & Son, painters and glaziers; Mr. Corbett, heating apparatus; and Mr. Kellett, slater.

Appointments.

NEWTON ABBOT, DEVON.—At a special meeting of the Council held on February 25, Mr. Coleridge Dingley White, Deputy-Surveyor to the Hauwell District Council, was appointed Surveyor to the Newton Abbot Urban Council at a salary of 250*l.* per annum.

NORFOLK.—Mr. D. C. Barnard has been appointed estate agent to the Norfolk Small Holdings Committee. Mr. Barnard, who is now sub-agent to Sir E. Lechmere at Hanley Castle, was formerly employed in the Duke of Bedford's estate office, Thorney.

MONMOUTHSHIRE.—The Sites and Buildings Committee of the Monmouthshire Education Committee have decided to recommend the appointment of a chief architect at 350*l.*, rising to 400*l.* per annum, and an assistant architect at 140*l.*, rising to 200*l.*

DORCHESTER.—Mr. P. T. Harrison, Borough Engineer's office, Fulham, has been appointed Borough Surveyor and Water Engineer of Dorchester. Mr. Harrison is an Associate member of the Institution of Civil Engineers and a member of the Royal Sanitary Institute and the Municipal and County Engineers.

IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY.—The Governing Body of the College have appointed as Secretary Mr. Alexander Gow, B.Sc., M.A., formerly scholar of Gonville and Caius College, Cambridge, who has for the last four years occupied the position of Director of Education and Principal of the Technical School, Blackburn.

Sanitary and Engineering News.

BOVEY TRACEY SEWERAGE AND SEWAGE DISPOSAL.—The sewerage and sewage disposal works of Bovey Tracey, for the Newton Abbot Rural District Council, have recently been completed. The contractors for the works were Messrs. Steer & Pearce, of Plymouth, whose tender was accepted at the sum of 4,818*l.* The works have been completed, including extra works and connexions for the sum of 5,187*l.* 6s. 10d., which amount is much below the engineers' estimate of 5,725*l.* Since the works were completed the sum of 541*l.* 9s. 2d. has been expended on additional works, bringing the total cost of works executed up to 5,728*l.* 16s. The work has been carried out from the plans and under the superintendence of Messrs. Beesley, Son, & Nichols, Westminster, the engineers called in by the Council. About three and three-quarter miles of sewers have been laid, which vary in size from 6 in. to 12 in. in diameter, with all requisite manholes, flushing-tanks, etc. The excavation has been largely in clay and sand, very little rock having been encountered, but the clay in some parts was of such a solid character that dynamite had to be used to disentegrate it. The population of the district sewered is about 2,000, and the sewage is dealt with on about 9 acres of land after undergoing preliminary treatment in open septic tanks. The sewage disposal works comprise a small screening and grit chamber, and open septic tanks in duplicate, each 50 ft. long by 15 ft. wide and 6 ft. deep, with a combined capacity of 50,000 gallons. From the detritus chamber the sewage passes into a transverse channel 18 in. wide with submerged inlets into the tanks. Below the top water line and across the lower end of the tanks is a line of slotted iron pipes, and the sewage passes through the slots and into the pipes and then by the outlet junctions into a channel on the exterior of the tanks. The storm water beyond six volumes of the dry-weather flow passes away to the west of the receiving chamber. The effluent from the tanks commands the whole of the land which is laid out for irrigation, and is led by means of pipes along the top parts of the land, small distributing chambers being placed at frequent intervals so that the effluent may be run on to any part of the land desired. The purified effluent is finally collected in open underdrains and conveyed to the River Bovey. The scheme is a gravitation one throughout, and the total cost of the works, including land, has been about 7,000*l.*

LEEDS SEWAGE EXPERIMENTS.—Under the auspices of the Yorkshire Section of the Society of Chemical Industry a paper was recently read at the Queen's Hotel, Leeds, by Mr. J. T. Thompson, chemist to the Leeds Sewerage Committee, on "The Value of Tanks in Sewage Disposal." Mr. Thompson began by describing the experiments carried out at Knostrop sewage works with septic tanks, and then showed that as far as the subsequent oxidation of the effluent was concerned the septic treatment possessed no advantage over other means of removing suspended solids from sewage. A twenty-four hours' flow through the tank was found to give the best results at Leeds, but in these circumstances it was not possible to obtain an effluent with less than 10 to 12 grains per gallon of suspended matter. Although septic tanks digested about 30 per cent. of the suspended solids originally in the sewage this advantage was largely neutralised by the fact that septic sludge was difficult to handle, and could not be pressed into cake without excessive cost in lime, filter-cloths, and labour. The tankage required for septic treatment was double that necessary for other systems. Although septic tanks at Leeds were not objectionable in themselves there would be a grave nuisance if the septic effluent had to be sprinkled over a large area of bacteria beds. A system of septic tanks was not capable of dealing with sudden increases in the volume of the sewage during storms, but this was easily done when precipitation tanks were employed. These were the chief reasons why the Leeds authorities had decided not to treat their sewage by means of septic tanks.

Miscellaneous.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Mr. W. Whiddington, architect and surveyor, has removed his offices from 71, Queen-street, Cheapside, to 63, Berners-street, Oxford-street, W.

SUB-CONTRACTING.—At the Lambeth Council on Thursday last week the General Purposes Committee stated that consideration had been given to the following resolution passed by the Council:—"To consider and report as to the desirability of inserting in all future contracts a condition placing directly upon the contractor the responsibility for the payment and observance by any sub-contractor to whom any part of the contract may be let of trade union rates and conditions in respect of the part of the contract so sub-let." The Committee now reported having carefully considered the matter, and recommended that in all future contracts the subjoined clause should be inserted:—"The contractor shall not sub-let, sell, or assign the contract or any part thereof without the consent of the Council, and should such consent be given, then the contractor shall continue liable for the whole of the work to be performed under the contract and for the due performance of the same by the sub-contractor or assignee, as the case may be, and such sub-contractor or assignee shall also be bound to perform and keep such terms, stipulations, and conditions of the contract as are applicable to the part of the work undertaken by such sub-contractor or assignee." This was adopted.

COMBINED DRAINAGE, ROYAL PROPERTY AT KENNINGTON.—At the Lambeth Council on Thursday last week it was reported that a letter had been received from Mr. Chas. Baker, Surveyor to the Duchy of Cornwall, enclosing a letter from Sir Maurice Holzmann, Secretary to the Duchy. The letters requested that in cases of application for combined drainage to premises belonging to the Duchy of Cornwall the Borough Council would give instructions for the old form of agreement for future maintenance of combined drains to be used in place of the new form of agreement, providing for the owner entering into a deed of covenant as to the future maintenance of the combined drain. The reason for the request being made was that Sir Maurice Holzmann, as Secretary of the Duchy and Keeper of the Records, has authority to enter into agreements such as in the past had been required; but he had no seal, and if a deed were required it would have to be specially drafted and passed under the Duchy seal, involving a special warrant from the Council of H.R.H. the Prince of Wales, and the enrolment of the deed amongst the Duchy records. Moreover, the Duchy officers, in their letters, reminded the Borough Council that in no case where property in the possession of the Duchy had been found to be drained by a combined system had the Borough Council been asked to contribute towards the expense of redrainage. Under the circumstances it was agreed to accept the old form of agreement.

KIRKBY-MALZEARD CHURCH, YORKS.—A fund is opened for the restoration, at a computed cost of about 4,500*l.*, of the fabric of the parish church of St. Andrew's, of which a fire consumed all but the walls a few days ago. It is stated that the edifice was insured for 2,700*l.* The church was enlarged in the early half of last century, and a sum of 4,000*l.* was expended upon its restoration many years ago under Sir A. W. Blomfield's directions and superintendence. The church has a late XIVth century tower, and contains some good earlier work. Kirkby-Malzeard at one time belonged to the house of Mowbray, Dukes of Norfolk, whose

castle there was demolished, *temp.* Henry II. The parish lies in the higher moorlands of the West Riding, about five miles distant from Ripon.

BEQUESTS BY AN ARCHÆOLOGIST.—The late Mr. J. D. G. Dalrymple, of Woodhead, Kirkintilloch, F.S.A. Lond and Scot., ex-President of the Glasgow Archæological Society, who died on February 8 last, in addition to various private and public bequests, has left to the Council of the Society just named a sum of 3,000*l.* for the endowment of the Dalrymple Lectureship on Archæology in the University of Glasgow, the appointment to the Lectureship to be vested in the curators appointed in virtue of an arrangement come to between Mr. Dalrymple and the University Court, the subject of the lectures to be in some branch of European archæology. The whole residue and remainder of Mr. Dalrymple's estate (including funds life-rented as they fall in) his trustees are directed to apply to the formation of a fund, the interest and annual proceeds of which are to be used for the purpose of making grants for the judicious restoration and repair of buildings of historical and antiquarian interest in Scotland, England, France, Spain, Italy, Germany, and Greece, but specially in Scotland, the fund to be administered by a board of trustees constituted as follows:—Three members from the Society of Antiquaries of Scotland, three members from the Glasgow Archæological Society, and one member from the Scottish Ecclesiological Society.

FUND FOR THE PRESERVATION OF BRITISH AND EUROPEAN HISTORICAL BUILDINGS.—In terms of the testamentary dispositions of the late Mr. J. D. G. Dalrymple, of Kirkintilloch, past-President of the Glasgow Archæological Society, his trustees are directed to devote the residue of his estate to the establishment of a fund whereof the yearly income is to be applied to grants in aid of the judicious restoration and repair of buildings possessing historical and antiquarian interest in England, France, Spain, Italy, Germany, Greece, and more especially in Scotland. The trust is to be administered by a board of seven representative members of the Society of Antiquaries, Scotland, and the Glasgow Archæological and Scottish Ecclesiological Societies. Mr. Dalrymple, who died a few days ago, was a Fellow of the Societies of Antiquaries, London and Scotland, and has bequeathed a legacy of 3,000*l.* to the Council of the Glasgow Archæological Society as endowment of the Dalrymple Lectureship on Archæology in Glasgow University; a branch of European archæology is to form the subject of the lectures.

CREOSOTED DEAL PAVING.—At the meeting of members of the Royal Sanitary Institute at Nottingham, on the 15th ult., Mr. Arthur Brown, City Engineer of Nottingham, made some pertinent remarks with reference to creosoted deal paving. He said:—"Those who had to maintain city roads believed that creosoted red deal would, and, in fact, had, come into favour again. No better instance of creosoted red-deal paving could be given than the piece in front of the Nottingham Guildhall, which had been laid for twenty-two years, and had not cost 5*l.* in repairs, and was perfectly sound, and not by any means at present worn out. No kind of uncreosoted wood could possibly show a result like this."

ROYAL COMMISSION ON THE ANCIENT MONUMENTS OF SCOTLAND.—The first meeting of this Commission was held on the 26th ult. in Edinburgh. It was decided to make a list of all the recorded monuments in Scotland as shown on the Ordnance Survey sheets, and described in general works of reference, and, as it is desirable to obtain information regarding monuments which have hitherto not been recorded, these lists will be circulated among the Commissioners. Having got these original skeleton lists, the Commission, it is proposed, will then proceed to take up the matter in detail by counties, and report on the character of the monuments, their general situation, so as to let any student know how to localise them, their local names, their general characteristics, stating whether excavation has been done or not, and, if so, where the relics, if any, were preserved, and to give references to printed descriptions. Afterwards it will be the duty of the Commissioners to consider and report which of these monuments are in their opinion worthy of preservation.

THE MEDIÆVAL ABBEYS AS SCHOOLS OF ART.—In connexion with the Edinburgh Typographia, Mr. Hippolyte J. Blanc, R.S.A., delivered a lecture on the 24th ult. in the Protestant Institute, George IV. Bridge, Edinburgh, on "Mediæval Abbeys: Their Place as Schools of Art." Mr. Hippolyte Blanc, in the course of his lecture, dealt with the history of the development of the abbey, from the isolated hermit's cell to the grouping of these in villages with a common church, to their union in connected form round the church, as in the Eastern monasteries, and, later, in one home, ranged round a cloister, as in the monasteries of Western Europe. These were illustrated and their gradual evolution explained in a large series of plans by lantern slides. The daily occupations in the monastery were touched upon, and the provisions made for carrying these out were pointed out in a plan, drawn in the IXth century for the monastery of St. Gall. The industries were specially referred to, and slides illustrating specimens of the art work produced were thrown on the screen. At the conclusion Mr. Blanc was accorded a hearty vote of thanks for his lecture.

PROPOSED STREET IMPROVEMENTS, YORK.—Mr. Edgar Dudley, F.S.I., Inspector to the Local Government Board, held an inquiry at the Guildhall, York, on the 26th ult., into an application by the City Council for a provisional order enabling them to compulsorily acquire certain properties for the purpose of constructing a new street from Pavement to Piccadilly, and so afford fresh access to the Hull-road and the country lying east of the city; also to borrow 18,250*l.* for paying for that portion of the property which is to be purchased by agreement. Mr. H. Craven, Town Clerk, explained that the Council had resolved to make the new street as certain historic houses, which occupied the site at the Pavement end, had been demolished. The total estimated cost of the undertaking was 40,680*l.*, which included 18,250*l.* for the purchase of the site provisionally bought; 14,824*l.* for the other property; 3,000*l.* for a new bridge over the Foss; and 4,300*l.* for street works. Mr. F. W. Spurr, City Surveyor, also gave evidence, and stated that the street would be 373 yds. long and 50 ft. wide, with footpaths on each side of 8 ft.

LONDON'S NEW SEWER.—At their meeting on Wednesday night the Stepney Borough Council considered a communication from Messrs. J. Mowlem & Co. with drawings showing the route through the borough of the northern low-level sewer, No. 2, and asking permission to sink shafts in ten different streets. The Borough Engineer reported that this would result in the closing of portions of certain streets. It was agreed to give the necessary permission on condition that the restoration of the roads disturbed is carried out to the satisfaction of the Borough Engineer.

ST. PANCRAS BOROUGH COUNCIL.—At the sitting of this Council on Wednesday a letter was received from the Leeds Fireclay Company stating that they had made a mistake in quoting 3*l.* per 1,000 for pressed and radiated blue bricks in their recent tender, and that they could not supply such bricks under 3*l.* 14*s.* per 1,000. As the Highways Committee were satisfied that the error was a *bonâ fide* one, it was agreed to accept the tender of Messrs. Doulton & Co. at 3*l.* 12*s.* per 1,000.

WHITECHAPEL LIBRARY.—Some time ago the Stepney Borough Council asked the London County Council that, when electrifying the tramways in Whitechapel High-street, they would repave the carriage-way opposite the library with noiseless material, and bear the cost thereof. The Highways Committee of the County Council now stated that they would do this if the local authority would bear the extra cost. At Wednesday's sitting of the Borough Council, disappointment was expressed at the decision, and it was agreed to inform the County Council that they did not see their way to fall in with the request.

COATOSTONE.—The Coatostone Decoration Company have sent us samples of asbestos board covered with a composition called "Coatostone." This composition is intended to be applied as a paint to surfaces of plaster, cement, or wood. When dry, the face has the appearance of stone, and any kind of stone can be imitated. We cannot regard imitation work of this description with any degree of enthusiasm, though we see no prospect of the demand for it becoming extinct. Moreover, we doubt the durability of the covering for external work exposed to weather. It is suitable for indoor use in exhibition buildings and other temporary structures, and would probably remain in good condition for several years on the walls of corridors, chapels, etc., if the walls were dry; but we cannot recommend it for external use.

ARTISANS', LABOURERS' AND GENERAL DWELLINGS COMPANY.—The annual report sets forth a balance on December 31 last of 67,634*l.*, after payment of dividends upon the preference capital at the rate of 4½ per cent. per annum, less tax, and an interim dividend of 5 per cent. per annum, less tax, upon the ordinary capital. The net revenue for the twelve months amounts to 133,045*l.* The revenue reserve is 10,000*l.*, and the capital reserve is 236,054*l.*; the leaseholds redemption fund stands at 24,619*l.* The directors recommend a dividend of 5 per cent per annum, less tax, on the ordinary capital for the second six months of 1907, thus leaving 1,454*l.* to be carried forward.

ARTISTS' BENEVOLENT INSTITUTION.—At the annual general meeting held on February 28, under the presidency of Mr. W. W. Ouless, R.A., it was announced that 3,686*l.* had been distributed, in sums ranging from 10*l.* to 100*l.*, amongst 187 applicants, and that the year's income for the artists' orphan fund amounted to 2,098*l.* The receipts for 1907 were 5,213*l.* 16*s.* 2*d.*, of which 2,117*l.* were subscribed at the last annual dinner. Sir Aston Webb, R.A., Mr. Briton Riviere, R.A., Mr. A. S. Cope, A.R.A., Mr. Alfred Drury, A.R.A., and Mr. Alfred East, A.R.A., attended the meeting, and Sir Edward J. Poynter, P.R.A., was re-elected President of the Institution.

EXTENSION OF MIDDLESEX GUILDHALL.—At the meeting, on February 27, of the Middlesex County Council, the Special Committee, which is considering matters in relation to the extension of the Guildhall at Westminster, reported that one of the conditions on which the freehold of the land and buildings adjoining the Guildhall were acquired from the Crown was that the existing road between the Guildhall and the National Society's late premises should be widened by the Council to a width of 40 ft. between the buildings. This widening would encroach considerably upon the land acquired by the Council, but at the time of purchase they had no alternative but to agree to this condition, inasmuch as the widened road was required by the Office of Works, in connexion with the scheme they had then under consideration for the development of adjacent Crown lands. It subsequently came to the knowledge of the Chairman of the County Council (Sir Ralph Littler) that the plans of the Office of Works for the development of Crown lands in the vicinity of the Guildhall had been somewhat altered, and it occurred to Sir Ralph that the proposed widening of the road might possibly not be a matter of vital importance to the Office of Works in connexion with their amended scheme. He accordingly communicated, informally, with the Office of Works, and the Committee was now able to report that that Office had agreed to the substitution of a road of a narrower width upon the extreme north portion of the land acquired. The arrangement was a most advantageous one to the Council in view of the fact that not only would it permit of the new buildings to be erected by the County Council being joined to the Guildhall, instead of a separate block being erected with all its attendant inconveniences, but the area of land available for buildings will be increased. The approval of Westminster City Council would be necessary to the suggested alteration, but no difficulty was anticipated in this direction. The Middlesex Council approved of the arrangement arrived at.

CAMBERWELL COUNCIL.—At the meeting of the Camberwell Council last week, it was unanimously decided to refuse to sanction the application of the County Council for permission to adopt the overhead system of traction for the authorised tramway which it is proposed to extend from Dulwich to Forest Hill. In connexion with the planting of trees in several of the streets in order to give work to the unemployed, the poll of the residents of the streets in which it was suggested that trees should be planted had resulted in favour, except in the case of Lordship-lane and Mundiana-road. Instructions were given to the Borough Engineer to plant the trees in the streets where they were desired, but only on condition that the grant of 7*s.* per tree promised by the Central Unemployed Committee was given. It transpired that now there were doubts as to whether the grant would be made. It was agreed to offer the Grove-lane garden to the London County Council on condition that that authority adapts it for organised games for school children, and contributes 50*l.* yearly towards the extinction of the Borough Council's loan charges. In consequence of the heat at the Turkish baths in Old Kent-road, the woodwork of the windows and ceilings is becoming perished, and the lead lights are dropping out. The ceiling of the second hot-room will probably have to be renewed with iron. It was decided to brick up the windows, but to take no action with regard to the other matters.

Law Reports.

HEAVY DAMAGES AGAINST SURVEYORS FOR ALLEGED NEGLIGENCE.

IN the King's Bench Division on the 3rd inst. the hearing was concluded before Mr. Justice Darling and a special jury of the case of Palmer *v.* Godwin, Basley, & Co.—an action by

Miss Margaret Elizabeth Palmer against the defendants, a firm of surveyors, carrying on business at No. 28, Cadogan-place, Belgrave-square, for damages for alleged negligence in advising her regarding certain property at Holloway, on the mortgage of which she lent 5,500*l.*

Mr. Bankes, K.C., Mr. A. A. Hudson, and Mr. Rose-Innes appeared for the plaintiff; and Sir Edward Carson, K.C., and Mr. Holman Gregory for the defendants.

Mr. Bankes said plaintiff was a lady of independent means living in London, who, on the advice of the defendants, advanced 5,500*l.* on the mortgage of a property consisting of some twenty houses in Seven Sisters-road, Holloway. The real defendant was Mr. Cullum, who carried on business under the very well-known name of Godwin, Basley, & Co. The action was brought on account of the defendants' alleged negligence in advising her that the property in question was fit security on which to advance the sum in question. From the very first plaintiff's solicitor, Mr. Hugh Rose-Innes, made it quite plain to the defendants that the greatest care should be exercised, as the lady required to be advised as to whether it would be a prudent investment. It appeared that in December, 1903, Messrs. Godwin & Basley were submitting to Mr. Rose-Innes particulars of properties regarding which the owners required advances on mortgage.

On January 5, 1904, plaintiff's solicitor wrote that his client would be prepared to advance 5,500*l.* at 4½ per cent., provided that after defendants had made their report she was satisfied that she would be justified in making the advance, and subject also to her solicitor being satisfied with the title. The letter also stated: "The report you will make will be the one upon which my client will be guided in respect to the proposed loan, and she naturally wishes to know whether you would advise a prudent person to lend as much on the security offered." He submitted that that was a very proper letter. The report sent by the defendants stated that the property was ample security, describing it as an excellent property in every way. As a result, the title was investigated and found to be satisfactory, and the money was advanced, the mortgage deed being dated March 18, 1904. The lady's experience of the property had been disastrous. The interest was paid for a short time only. The interest which should have been paid in September, 1905, was not paid, and, in consequence, in the early part of 1906, an action was brought against the mortgagor to recover the arrears of interest, and judgment was signed against him. It was, however, found impossible to realise anything under that judgment, and as a result a foreclosure action was brought, and a receiver was appointed. Then the question of the real nature of the property had to be looked into, and it was found to be in a most deplorable condition. It was a property on which no person who either had any knowledge of such matters or had made any kind of investigation could possibly have advised a loan of such a considerable sum, or, indeed, any sum of money. There were shops on the ground floor, with rooms attached, and above there were two floors occupied as flats. They were built about the year 1900. It was extraordinary that any authority should have allowed such places to be built, but he was told that they happened to be about 300 yds. outside the area of the London Building Act, and were therefore in the jurisdiction of the local authority. It was, perhaps, not an insignificant fact that, as he believed, the builder and lessee of the property happened to be a member of that local authority. If one walked down the street they looked a nice kind of house, but it was when one went round to the back that one found the real character of the houses. Though the bricks were not bad in themselves, the brickwork was shocking—it was the worst of mortar and the worst of bricklaying. With the exception of two houses, he believed that none of the brickwork had ever been pointed at all, and he thought that with a penknife you could pick out any of the bricks without any trouble. Two of the houses had concrete roofs. Both walls and ceilings in the flats were of matchboarding, and the floors of every living-room were covered with what he believed were described as rough Staffordshire pavement. The windows were peculiar. The lower part was fixed, the upper part was meant to open, but there was no ordinary way of opening it, though it was physically possible to do so. Some unfortunate tenants had brought in gas-stoves, but found that the only way to get the fumes out of the room was to make a hole in the window. Whether the gentleman who visited the premises—it was a Mr. Ransome, he believed—ever investigated these houses at all he did not know; but he should think the builder must have taken him into the two houses with the concrete roofs, and he must have taken it for granted that the others were the same. He contended that the plaintiff was entitled to a verdict for a substantial sum.

Mr. E. A. Gruning, architect and surveyor, examined, said he found, in 1907, that the brickwork was very inferior, and the mortar was of poor quality. It was not a fit security for an advance. The houses were badly constructed.

Mr. A. R. Stenning, architect and surveyor, corroborated.

Mr. Daniel Watney, surveyor, examined, said he should not advise anybody to advance any money upon such property. He doubted whether any buyer would be found if the property were put up to auction without reserve.

Mr. Howard Colls, examined, said he had examined the property in November, 1907, and he thought it was about the very worst piece of building he had ever seen. He thought the best thing would be to pull the houses down and rebuild, using as much of the old materials as possible, and then it would cost about 6,000*l.*

Mr. Edward T. Garland, an auctioneer, examined, said he had been appointed by the Court receiver of the property. He once found 6 in. of water on some of the roofs. During a period of three months the receipts amounted to 690*l.*, and the total outgoings to upwards of 1,000*l.*

At the close of the plaintiff's case, Sir Edward Carson, in opening the defence, said that Mr. Ransome had acted for the defendants in making the report, and he was a highly-competent surveyor. When he made his report in 1904 the houses were in a very good state of repair, indeed, having been built only three and a half years before. As to the roofs, Mr. Ransome had been deceived when he was told that they had all been concreted, and was shown the only two actually so constructed. It might have been that Mr. Crowe, the owner and builder of the property, had mismanaged it between 1904 and 1906 when a receiver was appointed for the plaintiff, and that when Mr. Crowe left he gutted the stoves, taps, and other internal fixtures. He contended that Mr. Ransome had made a very careful and proper survey of the property, and should not, even if found at all responsible, be held liable for the conduct of Mr. Crowe.

Mr. Thomas R. Ransome, a surveyor in the employment of the defendants, said that in January, 1904, he examined and reported upon the property with a view to 5,500*l.* being advanced on mortgage. He found some of the shops and half the flats in good condition. He saw no signs of any damp. Knowing that the trams would probably pass the property he formed the opinion that it would improve it. He thought each house cost 450*l.*, but was told that they had cost 500*l.* He estimated the net income at about 600*l.*, or just over, and that taken at fourteen years' purchase gave a sum of 8,790*l.* Upon those figures he recommended the loan of 5,500*l.* In 1906, in consequence of complaints, he saw the property, and it was then in a deplorable condition.

Cross-examined: He was thirty years old now, and twenty-six when he made the report. When he inspected the property he understood he was to report as the mortgagee's surveyor. In his opinion the rooms adjoining the shops were satisfactory, although there were no fireplaces in them.

His Lordship: Satisfactory for what?

The witness: For living purposes.

Mr. Bankes: What, no fireplaces?

Witness: These people live entirely in the kitchen.

His Lordship: Then what do they want the other room for?—For sleeping purposes.

Cross-examination continued: That class of flat was suitable for the tenants, and he saw nothing improper in having gas-stoves in the rooms with the pipes to take away the fumes going through the walls. He had seen infinitely worse lavatory accommodation.

Mr. J. W. Stevens, a surveyor, of New Bridge-street, examined, said he had seen the property, and in 1904 the neighbourhood was a good letting one. The property was erected with good bricks. He thought the property was capable of being put into a good state of repair for habitation. The tramway extensions and the ceasing of work at neighbouring factories had all tended to reduce the letting value of the property.

Mr. H. W. Reeve, a solicitor, examined, said he had acted for Mr. Crowe in the matter. When pressing for completion he received a message from the plaintiff's solicitor saying they would not complete till they had inspected and verified the report they had received. The neighbourhood had gone down in value in recent years.

At the conclusion of the addresses of counsel for the respective parties, and the summing-up of the learned judge, the jury returned a verdict for the plaintiff, and assessed the damages at 1,750*l.*

Judgment accordingly.

Patents of the Week.

APPLICATIONS PUBLISHED.*

3,006 of 1907.—D. M. NESBIT: *Heating and Ventilating Buildings or the like.*

This relates to a method of heating and ventilating buildings or the like, and consists in providing an opening in the sash or casement of a window and in covering this opening with a suitable filtering medium, and then in guiding the air which enters through the opening upon a suitable heater, such as a radiator.

3,877 of 1907.—R. THOMSON: *Stoves and Ranges.*

This relates to a stove or range having a fall-bar which is pivoted, and can be turned inwardly into the horizontal position, a dead plate arranged below the fall-bar, and which extends downwardly and rearwardly into the fire-box, and a fire-box bottom made in two parts with a space between them, said parts being arranged so that they overlap one another.

4,610 of 1907.—J. OCHS: *Hoisting Winch.*

This relates to a hoisting winch for loads of all kinds, provided with a loose ratchet wheel which is coupled up with the cable drum when the load is hoisted, and prevents automatic running out, and in which an automatic brake action takes place when the motion of the parts is reversed by means of a braking body, placed between the drum shaft and the drum, acting against an attachment fitted on the stationary drum shaft bearing, thus ensuring such an inertia of the drum shaft as to overcome the friction between the latter and a coupling member interposed between the drum shaft and the cable drum.

6,020 of 1907.—L. F. WASTELL: *Device for Facilitating the Fastening of Doors and the like.*

This relates to a device for facilitating the fastening of doors and the like, comprising a plate designed to be inserted and held between a door stile and frame, and provided with a slot or opening designed to accommodate and hold a second plate or the like across the edges of the door stile and frame.

6,045 of 1907.—BAYLISS, JONES, & BAYLISS, LTD., and W. H. MARSH: *Means of Fastening Together Component Parts of Wood Paving and Flooring Blocks.*

This relates to a wood paving or flooring block of which component parts are secured together by means of pegs or dowels, which are driven in from each end of the block for a distance which is somewhat more than half the length of the block, but less than the whole length, the longitudinal axes of the pegs or dowels lying in different lines from one another.

7,425 of 1907.—H. E. BOWER: *Latching Device for Doors and the like.*

This relates to latching devices for doors, windows, and the like of the type comprising a pivoted catch and staple, and consists in the provision of a slotted plate or sheave carrying a spring-controlled pivoted latch or bolt which has a cam-faced nose, and carries an operating lever or projection in combination with a cam-faced staple or eye with which the nose of the latch engages.

9,524 of 1907.—J. D. KIRKHAM: *Sash-window Fasteners.*

This relates to a sash-window fastener, which consists of a pedestal adapted to be fastened to the inner sash, and furnished with a screw-threaded cotter or key having a semi-circular head and flat neck for introduction into a two-way slotted shaft pivoted in a bracket fastened to the other sash.

19,289 of 1907.—W. CORBETT: *Window Wedges.*

This relates to a window wedge to prevent windows rattling of that class which comprises a plate having a flange at one end to form a handle and a longitudinal slot for passage of a guiding and retaining pin or screw, and consists in the plate being provided with a rearwardly extending spring acting as a wedge attached to or integral with its front end, and also slotted for passage of the retaining pin or screw.

22,628 of 1907.—F. ABEL: *Ceilings.*

This relates to a ceiling, comprising joists, a suspended lath framework rigidly secured only to the ends of the joists, pasteboard applied to the underside of the framework, and wire-work covering the pasteboard, and adapted to receive a layer of plaster.

23,982 of 1907.—D. G. HENDERSON and J. T. WILLIAMS: *Cramp Especially Applicable for Use in Drilling Girders.*

This relates to a cramp, comprising a base-plate adapted to rest against a girder, and

* All these applications are in the stage in which opposition to the grant of patents upon them can be made.

PATENTS.—*Continued on page 291.*

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, iv.; Contracts, iv. vi. viii. x.; Public Appointments, xxi.; Auction Sales, xxxi. and xxxii.

Certain conditions, beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements: and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.**

Competition.

* MAY 23.—**Devon.**—SCHOOL.—The Governors of the Tiverton Middle Schools invite competitive designs from architects for a new school for boys and girls, to accommodate 200 scholars, and cost about 6,000*l.* Premiums of 50 and 25 guineas for first and second respectively. For further particulars see advertisement in this issue.

Contracts.

BUILDING.

MARCH 9.—**Beckenham.**—BATTERY HOUSE.—The U.D.C. of Beckenham invite tenders for the erection of a new battery house at the existing Electricity Generating Station, Churchfields-road, Beckenham. Plans, etc., may be seen, and bills of quantities, etc., obtained, at the offices of the engineers, Messrs. Kincaid, Waller, Manville, & Dawson, 29, Great George-street, Westminster, S.W., on payment of a fee of 3*l.* 3*s.*

MARCH 9.—**Elgin.**—ALTERATIONS.—The mason, carpenter, plumber, slater, plaster, painter, and iron works of alterations at No. 70 and 74, High-street. The plans, etc., may be seen with Mr. John Wittet, architect.

MARCH 9.—**Great Torrington.**—PREMISES.—Business premises, dwelling-house, and stable, at Great Torrington, for Mr. John Lile, South-street, Torrington, from whom plans, etc., can be obtained.

MARCH 9.—**Leeds.**—ALTERATIONS.—The alterations and extensions to Mr. F. Klostermann's existing restaurant premises in Kirkgate, Leeds. Applications to Messrs. Thomas Winn & Sons, architects and surveyors, 84, Albion-street, Leeds.

MARCH 9.—**Liverpool.**—REPAIRS.—The Select Vestry invite tenders for jobbing repairs in connexion with the Workhouse, Brownlow-hill, and other parochial buildings. Forms of tender, etc., may be obtained on application to Mr. H. J. Hagger, Vestry Clerk, Parish Offices, Brownlow-hill.

MARCH 10.—**Bantry.**—SANITARY STRUCTURES.—The Bantry R.D.C. invite tenders for supplying and erecting three sanitary structures in the town of Bantry. Mr. Richard Croly, Clerk of the Council, Board-room, Bantry.

MARCH 10.—**Belfast.**—ALTERATIONS TO FIRE-STATION. Belfast Police Committee invite tenders for alterations, etc., to Whitla-street Fire Brigade-station. Drawings, etc., can be seen, and form of tender obtained, at the office of the City Surveyor.

MARCH 10.—**Edinburgh.**—GRAND STAND, ETC.—Grand stand and terracing at the sports ground for the Scottish National Exhibition, Edinburgh, 1908. Specifications, etc., may be seen at the office of Messrs. Alexander Hay & Co., surveyors, 44, Castle-street, Edinburgh. Copies of schedules and conditions of contract may be had from the Secretary, Mr. James Marchbank, S.S.C., 45, York-place, Edinburgh, on deposit of 1*l.* 1*s.*

MARCH 10.—**Nottingham.**—BANDSTAND.—The Castle Museum and School of Art Committee invite tenders for the erection of a bandstand at the Castle. Plans may be seen, and copies of the bill of quantities, etc., obtained, from Mr. Frank B. Lewis, City Architect, Guildhall, on payment of a deposit of 1*l.* 1*s.*

MARCH 12.—**Edinburgh.**—TAKING DOWN AND REBUILDING.—For taking down and re-erecting buildings at Haymarket-terrace, according to plans, etc., which may be seen at the Public Works Office, City-chambers.

MARCH 12.—**Unsworth, Whitefield.**—CHURCH ADDITIONS.—New vestries and western porch, Unsworth Church, Whitefield. Plans, etc., may be seen at the church and at the office of the architects, Messrs. Austin & Paley, architects, Lancaster. Bills of quantities may be obtained on application to Messrs. Wright & Sons, surveyors, Lancaster.

MARCH 13.—**Skewen.**—REBUILDING.—The rebuilding of the Colliers' Arms, Skewen, for Mr. E. Evans Bevan, Neath. Plans, etc., may be seen, and bills of quantities obtained, at the offices of Mr. J. Cook Rees, architect, Neath.

MARCH 14.—**Ballywalter.**—COTTAGES.—The erection of a semi-detached pair of cottages at Ballywalter, County Down, for Lord Dunleath. Plans, etc., may be seen at office of Mr. Ernest L. Woods, A.M.Inst.C.E., Bangor, County Down.

MARCH 14.—**Langthorne.**—ALTERATIONS TO CHURCH.—Alterations (inside work) of the Langthorne Primitive Methodist Chapel. Specifications may be seen at Mr. John Hobson's, Langthorne, Bedale.

MARCH 16.—**Dover.**—GRAND STAND.—Tenders (from Dover builders only) are invited by the Executive Committee for the erection, in the College Grounds, Dover, of a grand stand to accommodate about 5,000 people, the stand to be constructed entirely of timber. Plans, etc., to be seen at the offices of the Borough Surveyor, Mr. W. C. Hawke, A.M.Inst.C.E.

MARCH 16.—**Rishton.**—HOUSES.—The erection and completion of eight dwelling-houses in Cliffe-street, Rishton, for the Rishton Industrial Co-operative Society, Ltd. Plans, etc., may be seen, and any other information obtained, at the Secretary's office, 25, School-street, Rishton.

MARCH 17.—**Aberdeen.**—SLAUGHTER-HOUSE.—Estimates wanted for the mason, carpenter, plumber, gasfitter, plaster and cement, slater, painter and glazier, iron, and electric lighting works of a slaughter-house proposed to be erected at Hutcheon-street, Aberdeen, for the Aberdeen Flesher Incorporation. Plans, etc., may be seen, and schedules of quantities obtained, on applying at the office of Mr. John Rust, architect, 224, Union-street, Aberdeen.

MARCH 17.—**Clipstone.**—PUMPING STATION.—Mansfield Corporation invite tenders for the erection of a pumping station at Clipstone, near Mansfield. The drawings, etc., may be seen at the office of the engineers, Messrs. George & F. W. Hodson, M.M.Inst.C.E., at Bank-chambers, Loughborough, and copy of the schedule of quantities, etc., may be obtained on deposit of a cheque for 5*l.* 5*s.*

MARCH 17.—**East Ham.**—ALTERATIONS AT SCHOOL.—East Ham Education Committee invite tenders for the alterations at Sandringham-road Infants' School to convert class-rooms for the purposes of a mentally defective centre. Plan, etc., can be seen, and forms of tender, etc., obtained, at the office of the Committee's Architect, Mr. R. L. Curtis, 11 and 12, Finsbury-square, London, E.C. Each contractor must deposit with his tender a 5*l.* Bank of England note or crossed cheque of equal value.

MARCH 17.—**Greencroft.**—SCHOOL.—Durham C.C. invite tenders for new Council School at Greencroft. Plans, etc., may be seen, and bills of quantities obtained, at the office of Mr. G. T. Wilson, Durham-road, Blackhill.

MARCH 17.—**New Penshaw.**—SCHOOL ALTERATIONS.—The C.C. of Durham invite tenders for alterations at New Penshaw Council School. Plans, etc., may be seen at the school or at the office of the County Education Committee's Architect, Shire Hall, Durham. Bills of quantities may be obtained from Mr. A. J. Dawson, Clerk to the Education Committee, Shire Hall, Durham.

MARCH 17.—**Sheffield.**—CONVENIENCE.—Sheffield Health Committee of the City Council invite tenders for the construction and erection of a public convenience in Bolsover-road, Firth Park. Particulars, etc., may be obtained at the office of the City Surveyor, Town Hall, Sheffield, on payment of the sum of 10*s.*

MARCH 17.—**Withington.**—STAIRCASES, ETC.—The Guardians of the Chorlton Union invite tenders for the erection of new fireproof staircases, cubicles, and latrine at the Withington Workhouse. Plans, etc., may be seen, and bills of quantities obtained, at the offices of Messrs. Charles Clegg & Son, architects, of 21, Spring-gardens, Manchester, upon payment of 1*l.* 1*s.*

* MARCH 18.—**Caterham.**—ADDITIONAL QUARTERS.—The Metropolitan Asylums Board invite tenders for additional male staff quarters at Caterham Asylum. For further particulars see advertisement in this issue.

* MARCH 18.—**Poplar.**—IRON STAIRCASE.—The Poplar Guardians invite tenders for the erection of an external iron staircase. For further particulars see advertisement in this issue.

MARCH 18.—**Rochester.**—ADDITIONS TO POLICE-STATION.—Rochester Corporation invite tenders for making certain additions to the Police-station. Plans, etc., can be seen, and form of tender obtained, on application to the City Surveyor, Guildhall, Rochester.

MARCH 18.—**Wigan.**—STAIRCASES.—Wigan Guardians invite tenders for two fire-escape staircases at the Workhouse. For further particulars apply to the Master, Union Workhouse, Frog-lane, Wigan.

MARCH 19.—**Swanscombe.**—FIRE-STATION.—Swanscombe P.C. invite tenders for the erection of a fire-station in Church-road, Swanscombe. Copies of the drawings, etc., will be supplied by Mr. F. M. Kirby, Laureston, London-road, Greenhithe, on payment of 1*l.* 1*s.*

MARCH 20.—**Cardiff.**—CLERGY HOUSE.—For the erection of St. Mary's clergy house, Cardiff, for the Rev. Gilbert Heaton, M.A., Vicar. Plans may be seen, and bills of quantities obtained, at offices of Mr. G. E. Halliday, F.R.I.B.A., 19, Castle-street, Cardiff.

* MARCH 20.—**Chelsfield.**—SCHOOL.—The Kent Education Committee invite tenders for new Council School at Green Street Green, Chelsfield, and situated in World's End-road. For further particulars see advertisement in this issue.

MARCH 20.—**Failsworth.**—SCHOOL.—The Lancashire Education Committee invite tenders for the erection of a new public elementary school at Mather-street, Failsworth, to accommodate 700 children. The plans may be seen, and bills of quantities obtained, at the office of the County Architect, Mr. Henry Littler, 16, Ribblesdale-place, Preston, by payment of a deposit of 2*l.*

MARCH 21.—**Belfast.**—VILLA.—The erection of a villa in Malone-avenue. Plan, etc., may be had at office of Mr. Thomas Houston, architect and civil engineer, Kingscourt, Wellington-place, Belfast.

MARCH 23.—**Ebbw Vale.**—PARISH HALL.—The erection of a parish hall for the Rev. W. C. Williams, Vicar of Ebbw Vale. Plans, etc., can be seen, and further particulars obtained, at the office of Mr. Hy. Waters, architect, Market-chambers, Ebbw Vale.

MARCH 23.—**Killarney.**—CHURCH WORK.—The completion of the tower and spire, extension of nave and aisles, additions and alterations to sacristy, and new mortuary chapel at St. Mary's Cathedral, Killarney, Co. Kerry, for the Most Rev. Dr. Mangan, Lord Bishop of Kerry. Bills of quantities have been prepared for the work by Mr. D. W. Morris, surveyor, 68, Harcourt-street, Dublin, and can be had on payment of 2*l.* 2*s.*

* MARCH 24.—**Ilford.**—SCHOOL.—The Ilford U.D.C. invite tenders for completion of the partially erected elementary school in Uphall-road, Ilford, Essex. For further particulars see advertisement in this issue.

* MARCH 24.—**Liverpool.**—POST-OFFICE.—The Commissioners of H.M. Works, etc., invite tenders for the enlargement of the Southern District Post-office at Liverpool. For further particulars see advertisement in this issue.

* MARCH 26.—**London.**—DWELLINGS.—The St. Pancras B.C. invite tenders for erection of dwellings for the working class, Gray's Inn-road, W.C. For further particulars see advertisement in this issue.

* MARCH 30.—**Winchmore Hill.**—PAVILION.—The Enfield and Edmonton Joint Hospital Board invite tenders for the erection of a pavilion. For further particulars see advertisement in this issue.

DATE SPECIFIED.—**Newcastle-upon-Tyne.**—SCHOOL. The Education Committee invite tenders for the erection of completion of senior, junior, and infants' departments and higher elementary schools, Atkinson-road. Names, together with 1*l.* 1*s.* deposit, to the architect (Mr. F. Marshall Dryden, 6, Market-street, Newcastle-upon-Tyne); plans, etc., may be seen at the architect's office.

NO DATE.—**Ballyclare.**—MANSE.—The Committee of Second Ballyeaston Presbyterian Church invite tenders for building a manse, etc., near Ballyclare. Drawings, etc., may be seen, and further particulars obtained, at office of Mr. N. Fitzsimons, F.R.I.B.A., architect, 13, Lombard-street, Belfast.

NO DATE.—**Barrow-in-Furness.**—HOUSE.—A house in Croslands Park, Barrow-in-Furness. Plans, etc., may be seen, and copies of the quantities obtained, from Messrs. Settle & Brundrit, A.R.I.B.A., architects, Ulverston and Barrow-in-Furness.

NO DATE.—**Doncaster.**—HOTEL.—For pulling down of the Ram Hotel premises, High-street, Doncaster, and the erection of new hotel (fifty-five bedrooms) and three shop-shops. Names to Mr. W. H. Wagstaff, A.M.Inst.C.E., architect and surveyor, 57, Salter-gate, Chesterfield, and 5, Cleveland-street, Doncaster. Deposit of 2*l.* 2*s.* will be required on application for quantities.

ENGINEERING, IRON, AND STEEL.

MARCH 9.—**Manchester.**—CULVERTING.—The Paving, Sewering, and Highways Committee invite tenders for culverting, etc., the Gore Brook, near Birch Hall-road, Longsight. Drawings may be seen, and specification, etc., obtained, on application at the City Surveyor's office, Town Hall, Manchester, on payment to the City Treasurer of 2*l.* 2*s.* All cheques or postal orders are to be made payable to the order of "The Corporation of Manchester."

MARCH 10.—**Madras.**—STEEL CAISSON.—Madras Port Trust invite tenders for a steel caisson, 42 ft. square and 51 ft. high, weighing about 112 tons. Specifications, etc., can be obtained from Messrs. Rendel & Robertson, 3, Great George-street, Westminster, S.W., on payment of 5*s.*

MARCH 13.—**Bedminster.**—HEATING, ETC.—The Bristol Education Committee invite tenders for the heating and ventilating of the Council School now in course of erection at Parson-street, Bedminster. General conditions of contract, etc., may be inspected, and on payment of a deposit of 1*l.* 1*s.* bills of quantities, etc., may be obtained at the office of the architect, Mr. Henry Williams, Alliance-chambers, Corn-street, Bristol.

MARCH 16.—**Manchester.**—BOILERS.—The Baths and Washhouses Committee invite tenders for the supply of two Lancashire boilers, fittings, economiser, engine, etc., for Bradford Baths, Victoria-street, Bradford. Drawings may be seen, and specification obtained, at the office of the City Architect, Town Hall, upon payment of 1*l.* 1*s.* All cheques or postal orders are to be made payable to the order of "The Corporation of Manchester."

MARCH 16.—**Seaham Harbour.**—SUBWAY AND IRON BRIDGE.—The U.D.C. of Seaham Harbour invite tenders for the excavating and construction of a subway

and iron bridge between Lord-street and Ropery-walk. Plans, etc., may be seen on application to Mr. James Burrell, the Council's Surveyor, 6, Tempest-place, Seaham Harbour.

MARCH 17.—**Plymouth.**—FIRE-ESCAPE STAIRCASES.—Plymouth Guardians invite tenders for providing and fixing sundry external iron fire-escape staircases to the new infirmary buildings at the Plymouth Workhouse. Plans and specifications for same at the office of the architects, Messrs. Thornely & Rooke, No. 11, The Crescent, Plymouth.

* MARCH 19.—**Leavesden.**—ENGINES AND PUMPS.—The Guardians of St. Pancras invite tenders for overhauling and renewing soft-water engines and pumps at the schools of the parish, Leavesden, near Watford, Herts. For further particulars see advertisement in this issue.

MARCH 20.—**Bristol.**—ELECTRIC LIGHTING.—Bristol Docks Committee invite tenders for the electric lighting of the second tobacco warehouse, Cumberland Basin, Bristol. Drawings can be examined on application to Mr. W. W. Squire, Engineer, Engineer's office, Cumberland Basin, Bristol, from whom copies of the specification, etc., can be obtained, on production of a receipt from the Secretary of the Docks Committee showing that 3*l.* has been paid as deposit.

MARCH 20.—**Penryn.**—BRIDGE.—Cornwall C.C. Highways and Bridges Committee invite designs, specifications, and tenders for the construction and erection of a swing bridge, to carry heavy traffic, at Penryn. Particulars, etc., may be obtained on application to Mr. A. E. Brookes, County Surveyor (Western Division), St. Ives, Cornwall.

MARCH 26.—**Chatham.**—WEIGHBRIDGE.—Chatham T.C. invite tenders for the supply and erection of a public weighbridge. Full particulars can be obtained on application at the Borough Surveyor's office, Town Hall, Chatham.

MARCH 31.—**Richmond.**—PUMPING MACHINERY.—Richmond Main Sewerage Board invite tenders for the construction, etc., of two pumping engines. Specification, etc., may be inspected at the office of Mr. William Fairley, civil engineer, 69, Victoria-street, Westminster; also at the pumping station where the machinery is to be installed, West Hall-road, Kew Gardens. A copy of the specification, etc., may be obtained on personal application, and deposit of a crossed cheque for 5*l.* 5s.

NO DATE.—**Bude.**—SINKING WELL.—For sinking well, 4 ft. diameter, 100 ft. deep, at place four miles north of Bude, Cornwall. Apply Aqua, care of Mansford's, 95, Finsbury-pavement, London.

MISCELLANEOUS.

MARCH 7.—**Port-Glasgow.**—GAS METERS.—The T.C. of Port-Glasgow invite offers for the supply of pre-payment and ordinary gas meters, with stop cocks attached and Board of Trade standard size couplings.

MARCH 9.—**Barrow-in-Furness.**—PICK SHARPENING.—The Corporation invite tenders for pick sharpening, etc. Forms of tender, etc., may be obtained at the Borough Engineer's Office.

MARCH 9.—**Brislington.**—WATERING ROADS.—The Brislington P.C. invite tenders for watering roads. Full particulars, etc., may be obtained of Mr. A. G. Skilling, Clerk to the Council, Gordon Villa, Brislington.

MARCH 9.—**Epping.**—CARTING.—Epping R.D.C. invite tenders for carting gravel. Forms and further particulars from the Surveyor, Mr. Forrester, Thornwood, near Epping.

MARCH 9.—**Heavitree.**—LABOUR.—Heavitree U.D.C. invite tenders for the supply of a horse and man to work in connexion with the district for one year from April 1 next. Also for horse and man per day when required by the Surveyor for the same period. Mr. J. Walter W. Mathew, Clerk to the Council.

MARCH 9.—**Nottingham.**—FENCING.—The Public Parks Committee of the Nottingham Corporation invite tenders for the supply and erection of about 112 lin. yds. of three-rail wrought-iron hurdle fencing and taking down, etc., hurdle fencing at the new recreation ground, Victoria Embankment. Copies of the specification, etc., may be obtained from Mr. Frank B. Lewis, City Architect, Guildhall, Nottingham, on payment of 1*l.* 1s.

MARCH 9.—**Stafford.**—TEAM LABOUR.—Stafford R.D.C. invite tenders for team labour. Printed forms of tender may be obtained from Mr. William Morgan, Clerk to the Council, 4, Martin-street, Stafford, or from Mr. W. J. Lees, Surveyor, The Oaks, Walton-on-the-Hill, near Stafford.

MARCH 9.—**Tynemouth.**—LAMP PILLARS.—Tynemouth Corporation invite tenders for the supply of 200 cast-iron lamp pillars. Further particulars upon application to Mr. John F. Smillie, Borough Surveyor, Tynemouth.

MARCH 9.—**Tynemouth.**—STREET LANTERNS.—Tenders are invited for the supply of 600 street lanterns. Full particulars may be obtained upon applying to Mr. John F. Smillie, Borough Surveyor, Tynemouth.

MARCH 10.—**Branston.**—CARTING.—Branston R.D.C. invite tenders for carting. Forms of tender, etc., may be obtained from Mr. J. W. Sewards, Aubourn, and Mr. J. W. Watson, Potterhanworth, the Surveyors.

MARCH 10.—**Faversham.**—CARTING.—Faversham R.D.C. invite tenders at per day of nine working hours for all team labour required for one year. Form of tender and further particulars to be obtained of the District Surveyor, Mr. J. G. Chittenden, Ashford-road, Faversham.

MARCH 11.—**Kingston-upon-Thames.**—TEAM LABOUR.—The Corporation invite tenders for team labour for the period ending March 31, 1909. Conditions and forms of tender to be obtained of the Borough Surveyor's Office, Municipal Offices.

MARCH 11.—**Newbury.**—TEAM LABOUR.—The Newbury R.D.C. invite tenders for cartage and team labour. Further particulars, etc., can be obtained on application to Mr. E. H. Horncastle, Highway Surveyor, 2, Edinburgh-terrace.

MARCH 11.—**Northenden.**—SCAVENGING, ETC.—Bucklow R.D.C. invite tenders for the emptying of ashpits, etc., and the removal of nightsoil and house refuse contained in ashpits. Specification, etc., may be seen on application to Mr. R. M. Metcalfe, Inspector of Nuisances, Mosburn-buildings, Stamford New-road, Altrincham.

MARCH 11.—**Wantage.**—SCAVENGING.—Wantage U.D.C. Highway and Sanitary Committee invite tenders:—No. 1.—For sweeping and scavenging the streets. No. 2.—For collecting the house refuse. For particulars apply to the Surveyor, Town Hall, Wantage.

MARCH 11.—**Wellingborough.**—TEAM LABOUR.—The R.D.C. of Wellingborough invite tenders for team labour on the several roads in district. Forms will be furnished on application to the Assistant Surveyor, Mr. G. F. Bearn, of Wellingborough.

MARCH 12.—**London.**—SCAVENGING.—The Metropolitan Borough of Hackney invite tenders for the collection and removal of house refuse from the North and South Divisions of the borough. Copies of the conditions of contract, forms of tender, etc., can be obtained on application to the Medical Officer of Health, Town Hall, Mare-street, Hackney, N.E.

MARCH 14.—**Gnosall.**—HAULING.—Gnosall D.C. invite tenders for the hauling of material on to the roads. Forms of tender can be obtained at offices of Mr. H. G. U. Elliott, Clerk to the Council, Newport, Salop.

MARCH 14.—**Swanton Abbot.**—RESEATING.—Reseating Wesleyan Reform Chapel, Swanton Abbot. Particulars from Mr. F. H. Gray, Mr. F. Boulter.

MARCH 16.—**Bracebridge.**—SCAVENGING.—Bracebridge U.D.C. invite tenders for scavenging and removal of night soil, contents of ash bins and ash pits and street refuse, and team labour. Particulars can be obtained from the Surveyor, Mr. T. Brown, Gatehouse Hotel, Bracebridge.

MARCH 16.—**Bucklow.**—CARTING.—Bucklow R.D.C. invite tenders for the carting of road materials from railway stations, canal wharves, and the Knutsford Workhouse. Forms of tender, etc., will be supplied on application to Mr. Joseph Burgess, Highway Surveyor, Tabley, Knutsford.

MARCH 16.—**London.**—WATERING.—The Commissioners of His Majesty's Works, etc., invite tenders for the watering of and removal of slop from the roads in the Regent's Park. All particulars as to the conditions of the contract may be obtained from Mr. A. D. Webster, Superintendent's Lodge, Regent's Park, N.W.

MARCH 16.—**Rotherham.**—NIGHTSOIL REMOVAL.—Rotherham R.D.C. invite tenders for the removal and tipping of nightsoil. Further particulars, etc., may be obtained from Mr. B. Hey, Surveyor, 29*b*, High-street, Rotherham.

MARCH 17.—**East Ham.**—COLLECTION AND REMOVAL OF HOUSE REFUSE.—The T.C. invite tenders for the collection, removal, etc., of the house refuse in the Borough. Form of tender, etc., may be obtained upon application to Mr. C. E. Wilson, Town Clerk, Town Hall, East Ham, E.

MARCH 17.—**Gretton.**—CARTING.—Gretton R.D.C. invite tenders for carting granite. Forms of tender, etc., may be obtained on application (enclosing a stamped addressed envelope) to Mr. Fredk. Oakley, Clerk, Council Offices, Uppingham.

MARCH 17.—**Mitcham.**—SCAVENGING.—Mitcham Parochial Committee invite tenders for the weekly collection and removal of house and garden refuse, and for the supply of horses and carmen for street waterings. Forms of tender, etc., may be obtained at the offices of the R.D.C., Town Hall, Croydon.

MARCH 17.—**Southwell.**—CARTING.—Southwell R.D.C. invite tenders for carting road material. Forms of tender may be obtained for the North District from Mr. Richard Woolhouse, Highway Surveyor, Caunton, Newark, and for the South District from Mr. Robert Morris, Highway Surveyor, Southwell.

MARCH 17.—**Swindon.**—WELL WORKS.—Swindon and Highworth Guardians invite tenders for work in connexion with the well at the Workhouse, Stratton St. Margaret, in accordance with specifications, which can be seen on application at office of Mr. John P. Kirby, Clerk to the Guardians, Union Offices, Swindon.

MARCH 17.—**Uppingham.**—CARTING.—Uppingham R.D.C. invite tenders for granite carting. Forms of tender, etc., may be obtained on application (enclosing a stamped addressed envelope) to Mr. Fredk. Oakley, Clerk, Council Offices, Uppingham.

MARCH 21.—**Lancashire.**—SCHOOL SUPPLIES.—Lancashire Education Committee invite tenders for the supply of furniture (except school desks and pianos) for the County Elementary Schools. Tenders may be submitted for any one or more of the thirty-five local area districts. Particulars and conditions may be obtained from Dr. Snape, Director of Education, County Offices, Preston. Letters must be endorsed "Tenders."

NO DATE.—**Methil, Fifeshire.**—DREDGING.—For dredging about 40,000 cubic yds. of rock, Methil Dock, Fifeshire.—Applications for particulars to be addressed to Messrs. Robert McAlpine & Sons, contractors, 29, St. Vincent-place, Glasgow, or 25, Victoria-street, Westminster.

PAINTING, etc.

MARCH 9.—**Barrow-in-Furness.**—PAINTING.—The Corporation invite tenders for cleaning, painting, etc., the external wood and ironwork at the Central, Anson-street, and Roose police-stations. Form of tender, etc., can be obtained upon application at the Borough Engineer's Office, Town Hall.

MARCH 11.—**Nottingham.**—PAINTING.—Nottingham Watch Committee invite tenders for cleaning and painting at police-stations. Specifications, etc., may be obtained on application to the City Architect, Mr. Frank B. Lewis, Guildhall, on payment of a deposit of 10s. for each contract (three).

MARCH 11.—**Watford.**—PLUMBERS' JOINTS.—Watford U.D.C. invite tenders for plumbers' wiped joints on lead pipes for their Water Supply Department. Specification, etc., can be inspected at the office of the Engineer and Surveyor to the Council, 14, High-street, Watford.

MARCH 12.—**Ipswich.**—PAINTING.—Painting work to be carried out at Stoke and Handford bridges. Specification can be seen, and further information obtained, at the Borough Surveyor's office, Town Hall, Ipswich.

* MARCH 16.—**Notting Hill.**—PAINTING, ETC.—The St. Marylebone Guardians invite tenders for painting, colouring, cleaning, etc., at the Infirmary, Rackham-street, Notting Hill. For further particulars see advertisement in this issue.

MARCH 21.—**Rothwell.**—PAINTING.—The Committee of Rothwell Isolation Hospital invite tenders for painting the whole of the exterior woodwork at the Isolation Hospital, Rothwell, near Leeds. Specification, etc., may be obtained from Mr. W. B. Pindar, Clerk, Glasshouse-street, Hunslet, Leeds.

ROADS, SANITARY, AND WATER WORKS.

MARCH 9.—**Edinburgh.**—DRAINS.—The Magistrates and Council invite offers for the construction of new outlet drains for the slaughter-houses and cattle markets, Slateford. Specification, etc., prepared by the Burgh Engineer.

MARCH 9.—**Heavitree.**—MAKING-UP.—The widening and making-up of Goldsmith-street, Heavitree. Plans, etc., can be seen at the Council Offices, Heavitree.

MARCH 10.—**Belfast.**—SEWER.—Belfast Guardians invite proposals for laying a 15-in. sewer, in accordance with the plan and specification prepared by Messrs. Young & Mackenzie, architects and engineers, Belfast. The plan, etc., can be seen at office of Mr. Joseph W. Robb, Clerk of the Union, Clerk's office, Union Workhouse.

MARCH 10.—**Causey.**—SEWAGE WORKS.—Tanfield U.D.C. invite tenders for the construction of grit chambers, tanks and filters, etc., for the proposed sewage disposal works at Causey. Plans, etc., may be seen, and particulars obtained, on application to Mr. R. Heslop, surveyor, Burnopfield.

MARCH 12.—**Chelmsford.**—IMPROVEMENT OF DUKE-STREET.—The T.C. invite tenders for the execution of certain works of widening and improving Duke-street, near the railway station. Specifications, etc., may be obtained, and the plan may be inspected, at the Borough Surveyor's Office. Forms of tender may be obtained at office of Mr. W. Smith, Town Clerk, Municipal Offices, 16, London-road, Chelmsford.

MARCH 13.—**Larne.**—ROAD.—Antrim C.C. invite tenders for completing one or more sub-divisions of the new road authorised to be made under proposal No. 415, Larne Rural District, and known as the Star Bog new road. Also for supplying road metal, horsework, etc. Particulars can be ascertained from the District Surveyors, or at the County Surveyor's office, County Court House, Belfast.

MARCH 13.—**Leeds.**—PAVING.—Leeds Highways Committee invite tenders for the paving and flagging of streets. Drawings may be seen at the City Engineer's office, Municipal Buildings. Forms of tender, etc., may be obtained, and copies of the documents forming the contract inspected, on application at the Highways office, 155, Kirkstall-road.

MARCH 14.—**Houghton-le-Spring.**—STREET FORMATION.—The U.D.C. of Houghton-le-Spring invite tenders for the formation of Ironside-street at Houghton-le-Spring. Plan, etc., may be seen, and bills of quantities, etc., obtained, on application to Mr. John W. Holbrook, Surveyor to the Council. A deposit of 1*l.* will be required.

MARCH 14.—**Hunslet.**—SEWERAGE WORKS.—Hunslet R.D.C. invite tenders for the construction of about 450 yds. of pipe sewers at Woodlesford. Plans, etc., may be seen at office of Mr. W. B. Pindar, Clerk, Council Offices, Glasshouse-street, Hunslet, Leeds, and forms of tender will be supplied on application.

MARCH 16.—**Pontypridd.**—STREET WORKS.—The U.D.C. invite tenders for the carrying out of private street works. Plans, etc., may be seen, and forms of tender obtained, on application at the office of Mr. P. R. A. Willoughby, A.M.Inst.C.E., Engineer and Surveyor, upon receipt by Mr. J. Colenso Jones, Clerk to the Council, Municipal Buildings, Pontypridd, of a deposit of 1*l.* 1s. in respect of each contract (three).

* MARCH 16.—**St. Albans.**—SEWERAGE.—The Corporation of St. Albans invite tenders for four storm-water filter-beds, etc. For further particulars see advertisement in this issue.

MARCH 16.—**Spennymoor.**—ROAD WORKS.—Spennymoor U.D.C. invite tenders for the making of Barker-street and Vyner-street West, Spennymoor. Plans, etc., may be seen, and forms of tender obtained, on application to Mr. C. R. Spencer, Surveyor to the Council, Council Offices, Spennymoor.

MARCH 19.—**Westleigh.**—SEWER.—A sewer at Westleigh for the Barnstaple R.D.C. Specification, etc., can be had at office of Mr. Eric G. Kingwell, Surveyor, 85, Boutport-street, on the deposit of 1*l.* 1s.

MARCH 20.—**Portslade.**—SEWER.—The Managers of the London and Brighton Education Committees invite tenders for the laying of a new sewer to connect Portslade Industrial School drainage system with the Portslade main sewer, and other work in connexion therewith. Plans, etc., may be seen, and copies of the bills of quantities obtained, at the offices of the surveyors to the Managers, Messrs. T. Simpson & Son, 17, Ship-street, Brighton. The payment of 1*l.* will be required for each copy of the bills of quantities.

MARCH 21.—**Formby.**—STREET WORKS.—Formby U.D.C. invite tenders for private street improvements, Victoria-road and Barkfield-lane. Plans, etc., may be seen, and bills of quantities obtained, on application to the Surveyor, Mr. A. W. Pattison, at the Council Offices, Formby.

* MARCH 23.—**Hornsey.**—ROADS.—The Hornsey T.C. invite tenders for sewering, levelling, paving, metalling, kerbing, channelling, and making good Park-avenue North (second section), Hornsey. For further particulars see advertisement in this issue.

MARCH 25.—**Upton-on-Severn.**—SEWERAGE AND SEWAGE DISPOSAL.—The R.D.C. invite tenders for the provision, laying, and jointing of about two miles of 6-in. and 9-in. sewers, together with manholes, etc. Drawings, etc., may be seen, and bills of quantities obtained, at the offices of the engineers, Messrs. Willcox & Raikes, 63, Temple-row, Birmingham, on payment of a deposit of 3*l.* 3s.

* MARCH 31.—**Hackney.**—SEWER.—The London C.C. invites tenders for brick and iron sewer in the Metropolitan Borough of Hackney. For further particulars refer to an advertisement in this issue.

STONE, MATERIALS, AND STORES.

MARCH 9. — **Bolton.** — ARTICLES.—Bolton Waterworks Committee invite tenders for the supply and delivery of articles. Specifications, etc., may be obtained on application at the office of Mr. R. H. Swindlehurst, M.Inst.C.E., Waterworks Engineer, Town Hall, Bolton.

MARCH 9.—**Hexham.**—MATERIALS.—Tenders are invited for the supply of limestone and whinstone (for road metal). Printed forms of tender may be obtained from Mr. J. H. Nicholson, Clerk (offices, Midland Bank-chambers, Hexham).

MARCH 9.—**Liverpool.**—MATERIALS.—The Liverpool Select Vestry invite tenders for the supply of timber, etc. Printed form to be had on application at the Parish Offices (Mr. H. J. Hagger, Vestry Clerk, Brownlow-hill).

MARCH 9. — **Prestwich.** — MATERIALS. — Prestwich U.D.C. invite tenders for materials. Forms of tender, etc., can be obtained on application to the Surveyor at the Council Offices, Chester Bank, Prestwich.

MARCH 9.—**Stafford.**—GRANITE.—Stafford R.D.C. invite tenders for granite and slag. Printed forms of tender may be obtained from Mr. William Morgan, Clerk to the Council, 4, Martin-street, Stafford.

MARCH 10.—**Eston.**—MATERIALS.—Eston U.D.C. invite tenders for the supply of articles. Forms of tender may be obtained on application to Mr. C. McDermid, District Surveyor, Council Offices, Grangetown, S.O., Yorks.

MARCH 10. — **Faversham.** — ROAD MATERIALS.—Faversham R.D.C. invite tenders for the supply of pit flints (broken), shingle, and fine gravel. Full particulars may be had on application to Mr. J. G. Chittenden, District Surveyor, Ashford-road, Faversham.

MARCH 10. — **Leeds.** — ARTICLES. — The Sub-Parks (Cemeteries) Committee invite tenders for the supply of grass boards, etc., and flags, during the ensuing twelve months. Forms of tender, etc., may be obtained from Mr. W. T. Lancashire, City Engineer, Municipal Buildings, Leeds, on payment of a deposit of 1*l.* 1*s.*

MARCH 10.—**Leeds.**—MATERIALS, ETC.—The Sanitary Committee invite tenders for horse hire and materials. Further particulars, etc., may be obtained on application to Mr. J. J. Mann, Superintendent, Dock-street Depôt.

MARCH 10.—**London.**—STEEL, MATERIALS, ETC.—Bombay, Baroda, and Central India Railway Directors invite tenders for the supply of:—(1) Steel material; (2) foundry coke; (3) metals; (4) chemically dressed wagon covers; (5) wrought-iron and mild steel bolts, nuts, rivets, etc. Tenders must be made on forms, copies of which, with specifications, can be obtained at offices of Mr. W. V. Constable, Secretary, Gloucester House, 2, 3, and 4, Bishopsgate-street Without, London, E.C., on payment of 21*s.* each (which will not be returned).

MARCH 10.—**Taunton.**—FLINT.—The Guardians invite tenders for the supply of 300 (or 400) yds. of best flint. Mr. W. F. B. Dawe, Clerk to the Guardians, Taunton.

MARCH 10.—**West Derby.**—CONTRACTS.—The Guardians of the West Derby Union invite tenders from local firms only for the supply of materials and stores. Each tender to be enclosed in the special envelope provided by the Guardians for the purpose, and sent to Mr. Harris P. Cleaver, Union Clerk, Union Offices, Brougham-terrace, West Derby-road, Liverpool.

MARCH 11.—**Branston.**—GRANITE.—Branston R.D.C. invite tenders for road material. Specifications and forms of tender can be obtained from Mr. W. B. Danby, Clerk, 2, Bank-street, Lincoln.

MARCH 11. — **Cranbrook.** — HIGHWAY MATERIALS.—Cranbrook R.D.C. invite tenders for the supply of road materials. Forms of tender and full particulars may be obtained of Mr. T. H. Crampton, Clerk, Cranbrook, Kent.

MARCH 11. — **Felixstowe.**—MATERIALS.—Felixstowe and Walton U.D.C. invite tenders for the supply and delivery of materials. Specifications, etc., may be obtained on application to Mr. H. Clegg, A.M.Inst.C.E., Surveyor to the Council, Town Hall, Felixstowe.

MARCH 11.—**Hammersmith.**—GRANITE.—Hammersmith Guardians invite tenders for the supply and delivery of 100 tons of Guernsey granite spalls to the Workhouse, Ducane-road, Wormwood Scrubs, W. Mr. J. Lamb, Clerk to the Guardians, 206, Goldhawk-road, Shepherd's Bush, W.

MARCH 11.—**Ipswich.**—MATERIALS, ETC.—The Sanitary Authority invite tenders for the supply of materials and the execution of jobbing work and general repairs. Forms of tender, etc., can be obtained at office of Mr. E. Buckham, Borough Surveyor, Town Hall, Ipswich.

MARCH 11. — **Leeds.** — ANNUAL CONTRACTS. — Leeds Improvements Committee invite tenders for the supply of:—(1) builder's materials; (2) timber; (3) ironmongery; (4) plumber's materials; (5) glass; (6) paint. Copies of the schedules, etc., may be obtained from Mr. W. T. Lancashire, City Engineer, Municipal Buildings, Leeds, on payment of a deposit of 1*l.* 1*s.*

MARCH 11.—**London.**—RAILS, ETC.—The East Indian Railway Company invite tenders for the supply and delivery of:—(1) Steel bull-headed rails and fish-plates; (2) spring steel; (3) white metal ingots; (4) metals (antimony, brass, copper, lead, and zinc); (5) miscellaneous tools, as per specifications to be seen at the Company's offices. For each specification a fee of 1*l.* 1*s.* is charged, which cannot, under any circumstances, be returned. Mr. C. W. Young, Secretary, Nicholas-lane, London, E.C.

MARCH 11. — **South Shields.** — STORES.—The Corporation invite tenders for the supply of engine-room stores (except lubricating oils) for their Electricity Works at West Holborn. Conditions, etc., may be seen, and all information obtained, on application to Mr. J. H. Cawthra, M.Inst.M.E., Borough Electrical Engineer, West Holborn, South Shields.

MARCH 12.—**Dartford.**—ROAD MATERIALS, ETC.—The R.D.C. of Dartford invite tenders for the supply of materials and for the maintenance and repair and the steam rolling of the district roads. Forms of tender, with specification, can be obtained upon application to the Surveyor, Mr. John Hookins, "Gartly," Dartford.

MARCH 12. — **Easington.** — WHINSTONE, ETC. — Wanted, by the Guardians, tenders for whinstone and leading of coal, etc. For forms of tender apply to the Master of the Workhouse, Easington, Castle Eden.

MARCH 12.—**Manchester.**—OXIDE OF IRON.—Manchester Corporation Gas Committee invite tenders for the supply and delivery of 3,000 tons of oxide of iron purifying material. Mr. Wm. Henry Talbot, Town Clerk, Town Hall, Manchester.

MARCH 12.—**Whitchurch.**—STORES.—Materials for the City of Cardiff Mental Hospital, Whitchurch, near Cardiff. Forms of tender, etc., can be obtained on application to the Clerk and Steward of the Hospital.

MARCH 13. — **Cardiff.** — MATERIALS. — Cardiff Guardians invite tenders for twelve months' supply of building materials and ironmongery, oils and paints, and glass and glazing for the Cardiff and Ely Workhouses. Forms of tender to be obtained from Mr. Arthur J. Harris, Clerk, Queen's-chambers, Cardiff.

MARCH 13.—**Exeter.**—GOODS.—Exeter City Council invite tenders for the supply and delivery of goods for a period of one year. Printed schedules etc., can be obtained on application to Mr. Thomas Moulding, City Engineer and Surveyor, Municipal Offices, Exeter.

MARCH 13.—**Lancaster.**—MATERIALS.—The Visiting Committee invite tenders for supplying goods. Samples may be seen at the Asylum. Mr. Jno. R. Wilson, Clerk and Steward.

MARCH 13.—**Preston.**—STORES.—The Corporation of Preston invite tenders for the supply of general stores. Schedules may be obtained on application to the Engineer and General Superintendent, Dock Offices, Preston.

MARCH 13. — **Romney Marsh.** — SUPPLIES.—The Guardians invite tenders for the supply and delivery of supplies. Forms of tender can be obtained upon application to the Master of the Workhouse at New Romney.

MARCH 14. — **Bootle.**—STORES AND MATERIALS.—The Corporation of Bootle invite tenders for the supply of stores and materials and the execution of repairs. Forms of tender may be obtained at the Borough Electrical Engineer's office, Electric Light-station, Pine-grove, and samples inspected at the Electric Light-station.

MARCH 14.—**Burnley.**—MATERIALS.—Burnley Highways and Sewage Committee invite tenders for the supply of materials. Specifications, etc., may be obtained on application at the office of Mr. G. H. Pickles, M.Inst.C.E., Borough Engineer, Town Hall, Burnley.

MARCH 14. — **Hunslet.** — ROAD MATERIAL.—Hunslet R.D.C. invite tenders for granite, limestone, dross, flags, setts, and kerbs. Specification, etc., may be obtained on application from Mr. W. B. Pindar, Clerk, Council Offices, Glasshouse-street, Hunslet, Leeds.

MARCH 14. — **Littlemore.** — PAINT, ETC.—The Committee of Visitors of Oxford County Asylum, Littlemore, Oxford, invite tenders for the supply of paints, varnish, etc. A printed form of tender may be obtained on application to the Steward at the Asylum.

MARCH 14.—**Selby.**—ROAD MATERIAL.—Selby R.D.C. invite tenders for the supply of materials for the repair of the roads. Forms may be obtained from Mr. E. Townend, Clerk, Council Offices, 1, Abbey-place, Selby.

MARCH 14. — **Westhoughton.** — MATERIALS, ETC.—Westhoughton U.D.C. invite tenders for the supply of materials and stores. A list of quantities and form of tender may be obtained on application to Mr. Thomas Partington, Clerk to the Council, Town Hall, Westhoughton.

MARCH 14.—**Wing.**—MATERIALS.—Wing R.D.C. invite tenders for the supply and delivery of 750 tons of granite, and 1,500 tons slag, sand, and gravel. Tender forms may be obtained from the surveyor, Mr. M. G. Gurney, Leighton Buzzard.

MARCH 16.—**Belfast.**—TRAMWAY STORES.—The Tramways and Electricity Committee invite tenders for twelve months' supply. Forms of tender, etc., may be obtained on application to the Rolling Stock Superintendent, Tramway Offices, Napier-street, Belfast.

MARCH 16. — **Bristol.** — IRON AND STEEL. — Bristol Sanitary and Improvement Committee invite tenders for the supply of iron and steel. Specifications, etc., may be obtained at the offices of the City Engineer, 63, Queen-square, Bristol, on payment of a deposit of 10*s.*

MARCH 16. — **Bucklow.** — STONE, ETC. — Bucklow R.D.C. invite tenders for the supply of blue Welsh Penmaenmawr setts, etc., and for paving from April 1, 1908, to March 31, 1909. Further information and forms of tender may be obtained of Mr. Joseph Burgess, Tabley, Knutsford.

MARCH 16.—**Burton-upon-Trent.**—GRANITE, ETC.—The Guardians invite tenders for the supply of granite and for carting. Mr. C. F. Chamberlin, Clerk to the Guardians, Union Offices, Burton-on-Trent.

MARCH 16.—**Chorley.**—MATERIALS.—Chorley R.D.C. invite tenders for paving, coating on macadam, etc., painting and lettering direction posts, etc., and for materials. Further particulars and forms of tender may be obtained from Mr. Edward Lawrence, Highway Surveyor, Euxton, near Chorley.

MARCH 16. — **Maidstone.** — ROAD MATERIAL. — The U.D.C. invite tenders for the supply of road materials, etc. Specifications, etc., may be obtained on application at the office of the Borough Surveyor, Mr. T. F. Bunting, at the Fair Meadow, Maidstone.

MARCH 16. — **Melton Mowbray.** — GRANITE. — The Melton Mowbray R.D.C. invite tenders for the supply of about 6,500 tons of **XX** and **XXX** broken granite and about 2,600 tons of **XX** and **XXX** broken slag. Forms of tender may be obtained at office of Mr. Arthur H. Marsh, Clerk.

MARCH 16.—**Northwich.**—GOODS, ETC.—The U.D.C. of Northwich invite tenders for the supply of goods and execution of works. Mr. J. Arthur Cowley, Clerk of the Council.

MARCH 16. — **Sevenoaks.** — MATERIALS.—Sevenoaks U.D.C. invite tenders for manhole covers, gulley grates, shovels, stone forks, bass brooms and brooms for sweeping machine, Portland cement, etc. Particulars may be obtained of Mr. Samuel Towlson, A.M.Inst.C.E., Surveyor to the Council, at his office, Argyle-road, Sevenoaks.

MARCH 16.—**Tenterden.**—ROAD MATERIAL.—Tenterden R.D.C. invite tenders for the supply of quartzite, basalt, or other approved macadam, picked flints, and Kent ragstone. Further particulars, etc., may be obtained of Mr. W. L. C. Turner, District Surveyor, Tenterden.

MARCH 16.—**Wellingborough.**—STONE.—The R.D.C. of Wellingborough invite tenders for the supply of Hartshill, Mount Sorrel, and other granite, for the repairs of the Highways. Forms of tender may be had of the Clerk of the Council.

MARCH 16.—**Whitefield.**—ANNUAL TENDERS.—Whitefield U.D.C. invite tenders for the supply of materials. Specifications, etc., may be obtained on application to Mr. C. H. Wright, C.E., Surveyor, Council Offices, Whitefield.

MARCH 17. — **East Ham.** — ANNUAL SUPPLIES.—The T.C. of East Ham invite tenders for supplies and for doing work. Particulars, etc., may be obtained upon application at the office of Mr. C. E. Wilson, Town Clerk, Town Hall, East Ham, E., by forwarding an addressed envelope (foolscap size), duly stamped.

MARCH 17. — **Gretton.**—GRANITE.—Gretton R.D.C. invite tenders for granite. Printed forms of tender, etc., may be obtained on application (enclosing a stamped addressed envelope) to Mr. Fredk. Oakley, Clerk, Council Offices, Uppingham.

MARCH 17. — **Leeds.** — ANNUAL CONTRACTS. — Leeds Sewerage Committee invite tenders for the supply of:—(1) Cement; (2) sewer ironwork; (3) sewer and drain pipes, gullies, etc. Copies of the specification, etc., may be obtained from Mr. W. T. Lancashire, City Engineer, Municipal Buildings, Leeds, on payment of a deposit of 1*l.* 1*s.*

MARCH 17. — **Uppingham.**—GRANITE.—Uppingham R.D.C. invite tenders for granite. Printed forms of tender, etc., may be obtained on application (enclosing a stamped addressed envelope) to Mr. Fredk. Oakley, Clerk, Council Offices, Uppingham.

MARCH 18. — **Elham.** — ROAD MATERIALS. — Elham R.D.C. invite tenders for the supply and delivery of road materials. Forms of tender may be obtained from the surveyor, Lyminge, Kent.

MARCH 18. — **Hoo.**—MATERIALS.—Hoo R.D.C. invite tenders for materials, etc. Printed forms of tender may be obtained of Mr. Richard Philpott Smyth, Clerk, Strood.

MARCH 18.—**Leek.**—MATERIALS.—Leek U.D.C. Paving and Sewering Committee invite tenders for the supply and delivery of materials. Specification, etc., may be obtained upon application to Mr. W. E. Beacham, C.E., Surveyor and Wtaer Engineer, Town Hall, Leek.

MARCH 18. — **Strood.** — MATERIALS, ETC. — Strood R.D.C. invite tenders for highway materials and carting. Full particulars, etc., may be obtained on application to Mr. J. E. Povey, Clerk, Council Offices, Strood, Kent.

MARCH 19. — **Faversham.** — ROAD MATERIALS. — Faversham R.D.C. invite tenders at per ton for the supply and delivery of 1,550 tons of best Guernsey granite, Rhenish basalt, or Cornish syenite. Form of tender, etc., can be had on application to the District Surveyor (Mr. J. G. Chittenden), Ashford-road, Faversham.

MARCH 19. — **Preston.** — SUPPLIES. — Materials, County Asylum, Whittingham, Preston. Forms of tender may be had from Mr. Thomas Dilworth, Clerk and Steward.

MARCH 19. — **Whittingham.**—SUPPLIES.—Building materials, etc., for County Asylum, Whittingham, Preston. Forms of tender may be had from Mr. Thomas Dilworth, Clerk and Steward.

MARCH 20. — **Crompton.** — MATERIALS. — Crompton U.D.C. solicit tenders for the supply during the year of materials. Further particulars and forms of tender may be obtained on application to Mr. F. F. Gartside, Clerk and Surveyor, Town Hall, Shaw.

MARCH 20.—**Eastry.**—ROAD MATERIAL, ETC.—Eastry R.D.C. invite tenders for the supply of and delivery of surface and approved dug flints on the various roads in their district, and recarting stones from depôts. Tenders are also invited for steam rolling with 10-ton rollers. Forms of tender, etc., may be obtained of the District Surveyor, Mr. D. E. Foster, Hazel Bank, Eastry, Dover; or the assistant surveyor, Mr. M. Goodsell, Durlock-road, Ash, Dover.

MARCH 21.—**Gateshead.**—MATERIALS.—Tenders are invited for the supply of materials for the term of one year. Specification, etc., can be obtained at the office of Mr. N. P. Pattinson, Borough Surveyor, Town Hall.

MARCH 23.—**Guildford.**—MATERIALS.—The T.C. invite tenders for the supply of materials. All particulars, etc., may be obtained on application to the Borough Engineer, Mr. C. G. Mason, A.M.Inst.C.E.

MARCH 24. — **South Shields.** — MATERIALS. — The R.D.C. of South Shields invite tenders for materials. Specifications, etc., may be had on application to Mr. Thos. T. Bains, C.E., Surveyor, at the Council's Offices.

MARCH 31. — **Magor and St. Mellon's.** — ROAD MATERIAL.—The Magor and St. Mellon's R.D.C. invite tenders for the supply and delivery of broken limestone and gravel. Specifications, etc., may be obtained upon application at offices of Mr. Ithel Thomas, Clerk, Union Offices, Queen's Hill, Newport, Mon.

NO DATE.—**Hemsworth.**—STONE.—The R.D.C. of Hemsworth invite tenders for the supply of broken and unbroken whinstone, limestone, granite, and dross. Particulars, etc., may be obtained on application to Mr. T. H. Richardson, surveyor, Hemsworth, near Wakefield.

Public Appointment.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*QUANTITY SURVEYOR	Acton U.D.C.	See advertisement in this issue	March 23

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale
*TIMBER, MACHINERY, AND PLANT, WISBECH—On the Premises	Maxey & Son	March 9
*CONTRACTOR'S BUSINESS, ETC.—Rectory-grove, Clapham	E. Hugh Henry	do.
*TIMBER, ETC., PADDINGTON—On the Premises	Joseph Hibbard & Sons	March 10
*DEALS, BATTENS, ETC.—Great Hall, Winchester House, Old Broad street, E.C.	Churchill & Sim	March 11
*MACHINERY, BUILDER'S STOCK AND PLANT, LOWER EDMONTON—On the Premises	Alfred Bowyer & Jones	do.
*MACHINERY OF SAW-MILLS, ETC., BLACKFRIARS—On the Premises	Joseph Hibbard & Sons	March 12
*BUILDER'S STOCK, PLANT, ETC., ROMFORD—On the Premises	H. W. Smith	do.
*STOCK OF PAPERHANGINGS, CITY—3, Redcross-street, E.C.	Fryer, Cooper, & Co.	do.
*BUILDING MATERIALS, MACHINERY AND EFFECTS, SLEAFORD—On the Premises	Longstaff & Wadsley	March 13
*BUILDER'S STOCK, MAIDA VALE—On the Premises	Joseph Hibbard & Sons	March 16
*TIMBER STOCK, SHOREDITCH—On the Premises	Joseph Hibbard & Sons	March 17
*WOOD-WORKING MACHINERY, GRAY'S INN-ROAD, W.C.—On the Premises	Frank G. Bowen	do.
*161, BROMPTON-ROAD—At the Mart	Fox & Bousfield	March 18
*BUILDER AND CONTRACTOR'S PLANT, CANNING TOWN—On the Premises	Fuller, Horsey, Sons, & Cassell	March 24
*FREEHOLD ESTATE, NEW SOUTHGATE—At the Mart	Harman Bros.	March 27
*BUILDER'S PLANT, MACHINERY, ETC., WOOD-GREEN—On the Premises	Fuller, Horsey, Sons, & Cassell	March 31
*FREEHOLD BUILDING ESTATE, BRENTWOOD—At the Mart	Browett & Taylor	do.
*FREEHOLD BUILDING SITE, BOLT-COURT, E.C.—At the Mart	Fox & Bousfield	April 1
*BUILDING LEASE, OLD BROAD-STREET, THROGMORTON-STREET—At the Mart	Fox & Bousfield	April 8
*BUILDING ESTATE, MAYFAIR, W.—At the Mart	Winkworth & Co.	do.
*BUILDING ESTATE, ENFIELD—At the Mart	Walton & Lee	May 5

PATENTS.—*Continued from page 287.*

having a fixed jaw to grip one side thereof, a movable jaw to grip the other side thereof, a key or equivalent to tighten said movable jaw in place, and a pivoted stem carrying an adjustable bar to bear upon the drill.

8,011 of 1907.—G. E. NYE and G. A. KREIS: *Interlocking Metal Sheet-piling.*

This relates to interlocking metal sheet-piling, comprising units resembling I-beams, but having flanges on opposite sides of the web relatively offset, these having their free ends overturned outwardly to form hooks in which the free ends of the plane flanges of the adjacent units are received, the latter being confined between said hooks and the shoulders formed at the bases of the more outwardly disposed flanges at their junction with the web, a continuous wall of single thickness being thus constructed in which each unit is held against lateral movement relatively to the adjacent unit.

20,841 of 1907.—W. COTTRELL and THE FARRINGDON WORKS and H. PONTIFEX & SONS, LTD.: *Inlet Valves for Flushing Cisterns.*

This relates to inlet valves for flushing cisterns, and consists of the combination therein of an extended valve piston provided at about the centre of its length with a reduced part, in which is fitted a cup leather turned in the direction of the inlet aperture, and a pressure-reducing valve, consisting of a baffle furnished with hollow elongated projections of small diameter extending longitudinally into the surface pipe and towards the valve face so that an annular chamber is formed between said baffle and the valve inlet.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

February 21.—By SPELMAN (at Norwich).

Norwich.—429, Unthank-rd., ¼ acre, u.t. 987 yrs., g.r. 11*l.*, p. £700
22, Trory-st., f., p. 150

February 24.—By BRODIE, TIMBS, & CO.

Hampstead.—2, King's College-rd. (s.), u.t. 44¼ yrs., g.r. 12*l.* 10s., y.r. 85*l.* 750

By FULLER, HORSEY, SONS, & CASSELL.

Firth, Denbigh.—Freehold and leasehold stone works and quarries, together with the goodwill, 54 acres 7,000

By GEO. GOULDSMITH, SON, & CO.

Belgravia.—1, Chester-sq., u.t. 16 yrs., g.r. 8*l.*, y.r. 250*l.* 1,900
12, Chester-sq., u.t. 16 yrs., g.r. 3*l.*, y.r. 200*l.* 1,600
Pont-st., l.g.r. 100*l.*, u.t. 21 yrs., g.r. 10*l.* 1,120

February 25.—By BROWN & EWIN.

Wood Green.—3, Westbury-av., u.t. 89 yrs., g.r. 5*l.* 10s., y.r. 32*l.* 295
15 and 16, King-ley-villas, u.t. 90 yrs., g.r. 12*l.* 12s., y.r. 75*l.* 8s. 460

By C. W. DAVIS & SON.

Caledonian-rd.—17a, Lyon-st., u.t. 36½ yrs., g.r. nil, e. and w.r. 67*l.* 4s. 250
Holloway.—2, Crane-gr., u.t. 44 yrs., g.r. 6*l.*, e.r. 45*l.* 300

By MARK LIELL & SON.

Victoria Park.—32, Kenilworth-rd., f., e.r. 39*l.* £400
Forest Gate.—34, Station-rd. (s.), f., y.r. 55*l.* .. 880

By FREDERICK WARMAN.

Highbury.—1, Highbury-gr., f., p. 1,250
Stoke Newington.—168, Lordship-rd., u.t. 67 yrs., g.r. 11*l.* p. 800
Tottenham.—68, Stanmore-rd., u.t. 86 yrs., g.r. 6*l.*, w.r. 39*l.* 250

By SEDGWICK, SON, & WRALL (at Watford).

Watford, Herts.—50, 52, 54, and 56, Langley-rd., f., w.r. 75*l.* 12s. 850
16, 18, and 20, Garfield-st., f., w.r. 46*l.* 3s. .. 500

By J. C. PLATT (at Hammersmith).

Hammersmith.—96 to 114 (even), Queen-st., e., w.r. 260*l.* 2,425
23, Bridge-av., u.t. 34½ yrs., g.r. 5*l.* 5s., e.r. 45*l.* 300

February 26.—By DONALDSON & SONS.

Dalston.—3, Lenthal-rd., f., e.r. 36*l.* 350
23, Ridley-rd., u.t. 48 yrs., g.r. 7*l.*, y.r. 35*l.* .. 275

By MAY & PHILPOT.

Streatham.—127, Babington-rd., u.t. 92 yrs., g.r. 14*l.*, e.r. 75*l.* 1,000
Palace-rd., freehold building site 700

By C. HAYLEY MASON.

New Southgate.—Station-rd., f.g. rents 15*l.*, reversion in 70½ yrs. 375

By WALLER & CO.

Belgravia.—11, Wilton-pl., u.t. 14 yrs., g.r. 6*l.* 6s., y.r. 100*l.* 910

By ELLIOTT, ELLIS, & CO. (at Saltash).

Saltash, Cornwall.—Culver-pk., 2 a. 3 r. 37 p., f. 2,400

February 27.—By DENNANT & LAVER.

Brockley.—45, Shardeloes-rd., u.t. 56 yrs., g.r. 5*l.* 10s., e.r. 40*l.* 300

By DRYSDALE, NURSE, & CO.

Stoke Newington.—24, Northwold-rd., u.t. 72 yrs., g.r. 9*l.*, e.r. 50*l.* 500

By HERRING, SON, & DAW.

Clapham.—95 and 97, Manor-st., f., y.r. 66*l.* .. 690
Manor-st., f.g.r. 4*l.* 5s., reversion in 7 yrs. 230
127, Manor-st., f., y.r. 34*l.* 345
Manor-st., f.g.r. 4*l.* 15s., reversion in 6 yrs. .. 235

By HOLCOMBE, BETTS, & WEST.

Hyde Park.—50, Cambridge-ter., and 6, Southwick-mews, u.t. 24¾ yrs., g.r. 17*l.*, y.r. 130*l.* 950
Canonbury.—2, Alwyne-pl., u.t. 37¼ yrs., g.r. 10*l.*, e.r. 60*l.* 400
Portman Square.—6, Gloucester-pl., u.t. 5½ yrs. g.r. 100*l.*, y.r. 210*l.* 330

By C. HAYLEY MASON.

Willesden.—Church-rd., f.g.r. 5*l.*, reversion in 46½ yrs. 175
369, High-rd. (s.), u.t. 74 yrs., g.r. 6*l.* 10s., y.r. 40*l.* 295
High-rd., f.g.r. 10*l.*, reversion in 76 yrs. 240
310 and 308, High-rd., f., w.r. 57*l.* 4s. 580

By WILLIAM WESTON.

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By GRIMLEY & SON (at Birmingham).

Bilston, Staffs.—Millfields, mines, minerals, and 22 cottages, y.r. 233*l.* 3s. 8d., f. 3,500

By HENRY H. COLLIER & MADGE (at Acton).

Acton.—25, and 27, Goldsmith-rd., f., w.r. 62*l.* 8s. 590

February 28.—By G. PIERCY & CO.

Maida Vale.—17, Elgin-ter., u.t. 54 yrs., g.r. 5*l.* 10s., w.r. 75*l.* 300

By PRICE, ARROW, & TAYLOR.

Tooting.—284, Balham High-rd., f., p. 2,000

By W. WHITELEY.

Bayswater.—228, Westbourne-gr. (s.), u.t. 36 yrs., g.r. 7*l.* 7s., y.r. 60*l.* £350

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for office; s. for shops; ct. for court.

MEETINGS.

FRIDAY, MARCH 6.

Architectural Association.—Mr. P. L. Forbes on "Water-colour Drawing for Architects." 7.30 p.m.

Royal Institution.—Professor J. Milne on "Recent Earthquakes." 9 p.m.

Institution of Civil Engineers (Students' Meeting).—Papers to be read: (1) "Surveying on Thunder Bay Branch of the Grand Trunk Pacific Railway, Canada," by Mr. R. V. Morris; (2) "British Practice in Railway Surveying," by Mr. W. Graham; (3) "Railway Surveying in Great Britain," by Mr. W. C. Crawford. 8 p.m.

SATURDAY, MARCH 7.

Royal Institution.—Professor J. J. Thomson, M.A., LL.D., D.Sc., on "Electric Discharges through Gases."—I. 3 p.m.

Edinburgh Architectural Association.—Visit to Scottish National Exhibition Buildings.

MONDAY, MARCH 9.

University of London (South Kensington).—Mr. Banister Fletcher on "Spanish Gothic Architecture." 8 p.m.

London County Council School of Building, Clapham (Ferndale-road).—Professor Beresford Pite on "Ornamental Plaster Ceilings." (Lantern lectures for bricklayers, masons, carpenters, joiners, plasterers, and plumbers.) 7.30 p.m.

Surveyors' Institution.—The adjourned discussion on the paper read by Mr. W. G. S. Rolleston on "The Small Holdings and Allotments Act, 1907," will be resumed. 8 p.m.

Royal Society of Arts (Cantor Lecture).—Professor Vivian B. Lewes on "Fuel and its Future."—I. 8 p.m.

TUESDAY, MARCH 10.

Institution of Civil Engineers.—Paper to be further discussed, "The New York Rapid-Transit Subway," by Mr. W. Barclay Parsons. 8 p.m.

WEDNESDAY, MARCH 11.

Royal Society of Arts.—Mr. Ernest R. Matthews, F.R.S.E., on "The Use of Reinforced Concrete in Engineering and Architectural Construction in America." 8 p.m.

Architectural Association Discussion Section.—Mr. Frederick Hiorns on "Roofs, Dormers, and Chimney-Stacks." 7.30 p.m.

Edinburgh Architectural Association.—Mr. Ramsay Traquair on "Architectural Heraldry." 8 p.m.

Auctioneers' Institute of the United Kingdom.—Mr. Ernest Runtz, F.S.I., on "Hostelries, Ancient and Modern." 7.45 p.m.

Northern Architectural Association.—Fifth ordinary meeting of the session. To read the assessors' awards in connexion with the Glover Studentship, the prize essay, and the testimonies of study competitions, and to view the drawings, etc., submitted. 7.30 p.m.

Institution of Civil Engineers.—Students' visit to the Enfield-Stevenage loop-line, under construction, of the Great Northern Railway.

THURSDAY, MARCH 12.

London Institution.—Mr. F. Hovenden, F.L.S., F.G.S., on "A Study of the Principles of Nature."—II. 5 p.m.

Carpenters' Hall, London-wall.—Mr. James Powell on "The History of Painted Glass and its Process." 8 p.m.

FRIDAY, MARCH 13.

Glasgow Architectural Craftsmen's Society.—Mr. Thomas Frazer on "Domestic Hot-Water Supply." 8 p.m.

SATURDAY, MARCH 14.

Royal Institution. — Professor John Thomson on "Electric Discharges through Gases." 3 p.m.

TO CORRESPONDENTS.

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BRICKS, &c.

	£ s. d.	
Best Stocks	1 6 0	per 1000 alongside, in river.
Picked Stocks for Facings	2 10 0	" delivered.
Flettons	1 5 0	" at railway depôt.
Red Wire Cuts	1 14 0	" " "
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing	5 0 0	" " "
Best Blue Pressed Staffordshire	3 15 0	" " "
Do. Bullnose	4 0 0	" " "
Best Stourbridge Fire Bricks	3 14 0	" " "
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers	9 0 0	" " "
Headers	8 5 0	" " "
Quoins, Bullnose, and Flats	12 10 0	" " "
Double Stretchers	14 15 0	" " "
Double Headers	12 10 0	" " "
One Side and two Ends	14 15 0	" " "
Two Sides and one End	15 10 0	" " "
Splays, Chamferred, Squints	15 10 0	" " "

	s. d.	
Thames and Pit Sand	6 6	per yard, delivered.
Thames Ballast	5 0	" "
Best Portland Cement	30 0	per ton, "
Best Ground Blue Lias Lime	19 6	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 6d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½	" "
PORTLAND STONE (20 ft. average)—		
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 1	" "
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 2½	" "

	s. d.	
Ancaster in blocks	1 10	per ft. cube, deld. rly. depôt.
Beer "	1 6	" "
Greenshill "	1 10	" "
Darley Dale in blocks	2 4	" "
Red Corsehill "	2 2	" "
Closeburn Red Freestone	2 0	" "
Red Mansfield "	2 4	" "
YORK STONE—*Robin Hood Quality.*		
Scappled random blocks	2 10	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per ft. super., "
6 in. rubbed two sides ditto, ditto	2 6	" "

STONE (*continued*).

YORK STONE (*Robin Hood Quality*) *continued*—

	£ s. d.	
3 in. sawn two sides slabs (random sizes)	0 11½	per ft. cube, deld. rly. dept.
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	" "
1¼ in. to 2 in. ditto, ditto	0 6	" "
HARD YORK—		
Scappled random blocks	3 0	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 8	per ft. super. "
6 in. rubbed two sides ditto	3 0	" "
3 in. sawn two sides slabs (random sizes)	1 2	" "
2 in. self-faced random flags	0 5	" "

SLATES.

In. In.	£ s. d.	
20×10 best blue Bangor	13 2 6	per 1000 of 1200 at r. d.
20×12 " "	13 17 6	" "
20×10 first quality	13 0 0	" "
20×12 " "	13 15 0	" "
16×8 " "	7 5 0	" "
20×10 best blue Portmadoc	12 12 6	" "
16×8 " "	6 12 6	" "
20×10 best Eureka unfading green	15 17 6	" "
20×12 "	18 7 6	" "
18×10 "	13 5 0	" "
16×8 "	10 5 0	" "
20×10 permanent green	11 12 6	" "
18×10 " "	9 12 6	" "
16×8 " "	6 12 6	" "

TILES.

	s. d.	
Best plain red roofing tiles	42 0	per 1000 at rly. depôt.
Hip and Valley tiles	3 7	per doz. "
Best Broseley tiles	50 0	per 1000 "
Do. Ornamental tiles	52 6	" "
Hip and Valley tiles	4 0	per doz. "
Best Ruabon red, brown, or brindled do. (Edwards)	57 6	per 1000 "
Do. Ornamental do.	60 0	" "
Hip tiles	4 0	per doz. "
Valley tiles	3 0	" "
Best Red or Mottled Staffordshire do. (Peakes)	51 9	per 1000 "
Do. Ornamental do.	54 6	" "
Hip tiles	4 1	per doz. "
Valley tiles	3 8	" "
Best "Rosemary" brand plain tiles	48 0	per 1000 "
Best Ornamental tiles	50 0	" "
Hip tiles	4 0	per doz. "
Valley tiles	3 8	" "
Best "Hartshill" brand plain tiles, sand-faced	50 0	per 1000 "
Do. pressed	47 6	" "
Do. Ornamental do.	50 0	" "
Hip tiles	4 0	per doz. "
Valley tiles	3 6	" "

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13 10 0	... 15 0 0
Deals: best 3 by 9	13 0 0	... 14 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 0 0	... 12 0 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best.
Battens: seconds	0 10 0	" "
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	... 10 0 0
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	... 9 10 0
Foreign Sawn Boards—		
1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	"
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 4 10 0	... 5 0 0
Seconds	4 0 0	... 4 10 0
Small timber (8 in. to 10 in.)	3 12 6	... 3 15 0
Small timber (6 in. to 8 in.)	3 0 0	... 3 10 0
Swedish balks	2 10 0	... 3 0 0
Pitch-pine timber (30 ft. average)	4 0 0	... 4 15 0

JOINERS' WOOD.	At per standard. £ s. d.	£ s. d.
White Sea: first yellow deals, 3 in. by 11 in.	24 0 0	... 25 0 0
3 in. by 9 in.	22 0 0	... 23 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	... 18 0 0
Second yellow deals, 3 in. by 1 in.	18 10 0	... 20 0 0
" " 3 in. by 9 in.	17 10 0	... 19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	... 14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	... 15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	... 12 0 0
Petersburg first yellow deals, 3 in. by 11 in.	21 0 0	... 22 10 0
Do. 3 in. by 9 in.	18 0 0	... 19 10 0
Battens	13 10 0	... 15 0 0
Second yellow deals, 3in. by 11in.	16 0 0	... 17 0 0
Do. 3 in. by 9 in.	14 10 0	... 16 0 0
Battens	11 0 0	... 12 10 0
Third yellow deals, 3 in. by 11 in.	13 0 0	... 14 0 0
Do. 3 in. by 9 in.	12 10 0	... 14 0 0
Battens	10 0 0	... 11 0 0
White Sea and Petersburg—		
First white deals, 3 in. by 11 in.	14 10 0	... 15 10 0
" " 3 in. by 9 in.	13 10 0	... 14 10 0
Battens	11 0 0	... 12 0 0
Second white deals, 3in. by 11 in.	13 10 0	... 14 10 0
" " 3 in. by 9 in.	12 10 0	... 13 10 0
" " battens	10 0 0	... 11 0 0
Pitch-pine: deals	18 0 0	... 21 0 0
Under 2 in. thick extra	0 10 0	... 1 0 0

WOOD (*continued*).

JOINERS' WOOD (*continued*)—	At per standard. £ s. d.	£ s. d.
Yellow pine—First, regular sizes	44 0 0	upwards.
Oddments	32 0 0	"
Seconds, regular sizes	33 0 0	"
Yellow Pine oddments	28 0 0	"
Kauri Pine—Planks, per ft. cube	0 3 6	... 0 5 0
Danzig and Stettin Oak Logs—		
Large, per ft. cube	0 3 0	... 0 3 6
Small " "	0 2 6	... 0 2 9
Wainscot Oak Logs, per ft. cube	0 5 6	... 0 6 0
Dry Wainscot Oak, per ft. sup. as inch	0 0 8½	... 0 0 9½
¾ in. do. do.	0 0 7	... —
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	... 0 1 0
Selected, Figury, per ft. super. as inch	0 1 6	... 0 2 6
Dry Walnut, American, per ft. super. as inch	0 0 10	... 0 1 0
Teak, per load	17 0 0	... 22 0 0
American Whitewood Planks, per ft. cube	0 4 0	... 0 5 0
Prepared Flooring, etc.—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	... 0 17 0
1 in. by 7 in. yellow, planed and matched	0 14 0	... 0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	... 1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	... 0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	... 0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	... 0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	... 0 13 6
1 in. by 7 in. " "	0 14 0	... 0 18 0
¾ in. by 7 in. white "	0 10 0	... 0 11 6
1 in. by 7 in. " "	0 12 9	... 0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	7 10 0	... 8 0 0
Compound Girders, ordinary sections	9 10 0	... 10 10 0
Steel Compound Stanchions	12 0 0	... 13 0 0
Angles, Tees, and Channels, ordinary sections	9 10 0	... 10 10 0
Flitch Plates	9 10 0	... 10 0 0
Cast Iron Columns and Stanchions including ordinary patterns	8 0 0	... 9 0 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	8 10 0	... 9 0 0
Staffordshire Crown Bars, good merchant quality	8 15 0	... 9 5 0
Staffordshire "Marked Bars"	10 10 0	... —
Mild Steel Bars	8 15 0	... 9 5 0
Hoop Iron, basis price	9 5 0	... 9 10 0
" " Galvanised	17 0 0	... —
("And upwards, according to size and gauge.)		
Sheet Iron Black—		
Ordinary sizes to 20 g.	9 15 0	... —
" " 24 g.	10 15 0	... —
" " 26 g.	12 5 0	... —
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 0 0	... —
Ordinary sizes to 22 g. and 24 g.	15 10 0	... —
" " 26 g.	16 10 0	... —
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	18 0 0	... —
" " 22 g. and 24 g.	18 10 0	... —
" " 26 g.	20 0 0	... —
Galvanised Corrugated Sheets—		
Ordinary sizes, 6 ft. to 8 ft. 20 g.	14 10 0	... —
" " 22 g. and 24 g.	14 15 0	... —
" " 26 g.	16 5 0	... —
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	12 0 0	... —
Best Soft Steel Sheets, 22 g. & 24 g.	13 0 0	... —
" " " 26 g.	15 0 0	... —
Cut Nails, 3 in. to 6 in.	10 10 0	... 11 0 0

(Under 3 in., usual trade extras.)

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3lb. and up.	17 0 0	... —
Pipe in coils	17 10 0	... —
Soil pipe	20 0 0	... —
Compo pipe	21 0 0	... —
ZINC—Sheet—		
Vieille Montagne ... ton	28 10 0	... —
Silesian	28 5 0	... —
COPPER—		
Strong Sheet per lb.	0 1 1	... —
Thin "	0 1 2	... —
Copper nails "	0 0 11	... —
Copper wire "	0 0 10	... —
BRASS—		
Strong Sheet "	0 1 0	... —
Thin "	0 1 1	... —
TIN—English Ingots "	0 1 4	... —
SOLDER—Plumbers' "	0 0 7	... —
Tinmen's "	0 0 9	... —
Blowpipe "	0 0 11	... —

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

15 oz. thirds	2½d.	per ft. delivered.
" fourths	1¾d.	" "
21 oz. thirds	3¼d.	" "
" fourths	2¼d.	" "
26 oz. thirds	4¼d.	" "
" fourths	3¼d.	" "
32 oz. thirds	5d.	" "
" fourths	4¼d.	" "
Fluted Sheet, 15 oz.	3¼d.	" "
" 21 oz.	4¼d.	" "

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

Hartley's	2¼d. per ft. delivered.
"	2¼d. " "
"	2¼d. " "
Figured and Oxford Rolled	
"Oceanic" Glass, white	4d. " "
Do. " tinted	5¼d. " "

OILS, &c.		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	2	1
" " in barrels	"	0	2	2
" " in drums	"	0	2	4
Boiled " in pipes	"	0	2	3
" " in barrels	"	0	2	4
" " in drums	"	0	2	6
Turpentine in barrels	"	0	3	2
" in drums	"	0	3	4
Genuine Ground English White Lea	per ton	22	10	0
Red Lead, Dry	"	22	0	0
Best Linseed Oil Putty	per cwt.	0	7	0
Stockholm Tar	per barrel	1	12	0

VARNISHES, &c.	Per gallon. £	s.	d.
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak	0	10	0
Superfine Hard-drying Oak, for seats of Churches	0	14	0
Fine Elastic Carriage	0	12	6
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Maple	0	16	0
Finest Pale Durable Copal	0	18	0
Extra Pale French Oil	1	1	0
Eggshell Flatting Varnish	0	18	0
White Copal Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	0
Berlin Black	0	16	0
Knotting	0	10	9
French and Brush Polish	0	10	6

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TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

*Denotes *accepted*. † Denotes *provisionally accepted*.

AXMINSTER (Devon).—For the erection of two villas, for the Axminster Development Syndicate, Ltd. Messrs. Symes & Madge, architects, Chard. Quantities by architects:—

Draper & Son	£1,350 0 0
Perkins	1,100 0 0
Spiller & Son	1,099 0 0
Bishop & Son	1,087 4 11
Bailey & Smith	1,080 0 0
Rider & Co.	1,066 0 0
Cloud & Clarke	1,050 0 0
T. Munford & Son	1,028 0 0
Relleen & Griffiths	1,025 0 0
Newbery & Son	1,010 0 0
Parsons Bros. & Dunster, Perry-street, Chard*	956 0 0

[Architects' estimate, £1,030.]

BELMONT (Surrey).—For the erection of a bacteriological laboratory, for the Metropolitan Asylums Board. Messrs. T. W. Aldwinckle & Son, architects, 20, Denman-street, London Bridge, S.E.:—

T. E. Wright	£6,944	0 0	G. Potter	£5,900	0 0
Wood & Co.	6,855	0 0	W. Lawrence & Son	5,874	0 0
H. Philbey	6,756	12 2	W. Johnson & Co., Ltd.	5,850	0 0
L. Kazak	6,540	17 9	Turtle & Appleton	5,840	0 0
J. Lonsdale	6,474	0 0	G. Godson & Sons	5,789	0 0
W. Reason	6,397	0 0	T. D. Leng	5,786	0 0
J. W. Falkner & Sons	6,283	0 0	Kirk & Randall	5,776	0 0
W. J. Bloxham	6,260	0 0	J. B. Potter	5,768	0 0
Cropley Bros., Ltd.	6,228	0 0	Hyde & Co.	5,750	0 0
Jones & Andrews	6,175	0 0	General Building Co.	5,700	3 9
Martin, Wells, & Co., Ltd.	6,170	0 0	J. Barker & Co., Ltd.	5,629	0 0
H. Kent	6,164	0 0	B. E. Nightingale	5,552	0 0
F. G. Minter	5,994	0 0	W. Wallis, 207 & 209, Balham High-road, S.W.*	5,503	15 0
J. Day	5,977	18 2			
C. Wall, Ltd.	5,967	0 0			
W. Pattinson & Sons, Ltd.	5,964	0 0			
Leslie & Co., Ltd.	5,957	0 0			
Thompson Bros.	5,929	16 5			

BLYTH (Northumberland).—For 65 lineal yds. of boundary wall and wrought-iron railings, for the Urban District Council. Mr. R. Grieves, Surveyor, Seaforth-street, Blyth:—

Middlemiss Bros.	£110	5 0	Robson & Waddle, Blyth*	£79	15 3
R. Baxter	108	0 0			
R. Swan	85	15 0			

BOURNEMOUTH.—For additions to the refreshment kiosk on the pier, for the Town Council. Mr. F. W. Lacey, M.Inst.C.E., Borough Engineer and Surveyor, Municipal Offices, Bournemouth:—

J. McWilliam & Son, Bournemouth* £588

BOURNEMOUTH.—For sewering of Muccleshell-road, for the Borough Council. Mr. F. W. Lacey, M.Inst.C.E., Borough Engineer and Surveyor, Municipal Offices, Bournemouth:—

W. P. Saunders, Bournemouth* £227 14 3

BOURNEMOUTH.—For making-up Green-road (first portion), for the Borough Council. Mr. F. W. Lacey, M.Inst.C.E., Borough Engineer and Surveyor, Municipal Offices, Bournemouth:—

M. Loader, Bournemouth* £368 13 7

BOURNEMOUTH.—For the construction of a pavilion at Winton Pleasure Grounds, for the Town Council. Mr. F. W. Lacey, Borough Engineer and Surveyor, Municipal Offices, Bournemouth:—

W. Jones & Son, Bournemouth* £1,135

BOWNESS-IN-WINDERMERE.—For completing the main road on the Craig Estate, for the Rt. Hon. Lord Decies. Mr. Joseph Bintley, engineer. Quantities by engineer:—

T. & W. Dirkin	£685 4 9	G. H. Pattinson*	£662 0 0
T. & M. Atkinson	666 0 0		

BRIDLINGTON.—For erecting a dwelling house in Station-road, for Mr. F. E. Harrison. Mr. J. Shepherdson, architect, 15, Manor-street, Bridlington:—

F. Kneeshaw	£705 18 0	F. W. Martindale	£629 0 0
Sampson & Siddall	691 3 10	T. Gray, 47, Horsforth-avenue, Bridlington*	518 0 0
A. A. Booth	670 0 0		
E. Wilson	634 0 0		
C. Grant	630 0 0		

BURSLEM.—For raising walls and repairing and making good roof of retort-house at gasworks, for the Gas Committee. Mr. E. Jones, engineer and manager, Gas Offices, Longport:—

Grant & Sons	£900	J. W. Brindley, Burslem*	£649
Wardle Bros.	750		
Bennett Bros.	720		

CADELEIGH (Devonshire).—For reinstating and rebuilding farmhouse and buildings at Meadhayes, for the Rev. F. Roberts. Mr. Wm. Barrons, surveyor, Tiverton:—

E. Labdon & Sons	£1,125	S. Manning, Tiverton*	£735
J. Grater & Sons	985		
J. Thorn & Co.	849		

CARMARTHEN.—For restoration at No. 2, Spilman-street, for Jesus College, Oxford. R. England & Son, architects, Oxford:—

T. Morris, Carmarthen £179 16

CHESTERFIELD.—For work of painting, etc., at the swimming-baths, Central Council School, Ashgate-road, for the Education Committee. Mr. W. C. Jackson, architect:—

R. Blake £104 0 0
I. Eyre & Sons, Holywell-street, Chesterfield* 97 18 6

DARTFORD.—For construction of a pump-house, storage tank, etc, Victoria-road, for the Urban District Council. Mr. T. E. Tiffin, Surveyor, Council Offices, Dartford:—

Pump-house.
W. I. Blay, Dartford* £350 0
Pumps.
T. Parker, Ltd, Wolverhampton* 604 0
Cast-iron Tank.
S. Russell & Sons, Leicester* 624 13

DUDLEY.—For sewer works in the Birmingham-road district and the Derby-end district, Netherton, for the Public Works Committee. Mr. J. Gammage, Borough Surveyor, Town Hall, Dudley. Quantities by Borough Surveyor:—

Birmingham-road, West.
H. Hughes & Son, Dudley* £2,368 11 0
Derby-end.
H. Hughes & Son, Dudley* 966 11 3

ENFIELD.—804 yds. of oak palisade fencing at Enfield, for the Metropolitan Water Board:—

	Total estimated cost.
W. Gray, at 9s. 2d. per yd.	£368 10 0
J. & S. Agate, at 6s. 11½d. per yd.	279 14 6
Stenning & Co., at 6s. 7½d. per yd.	266 6 6
Rowland Bros., at 6s. 6½d. per yd.	262 19 6
J. T. Brooker, at 6s. 6d. per yd.	261 6 0

ESHER.—For the erection of a private residence upon the Esher Lodge Estate, Esher, Surrey, for Mr. E. Collins. Mr. Chas. H. Isaacs, architect and surveyor, Hammersmith Broadway, W.:—

H. & E. Lea	£2,050	H. Gaze & Sons	£1,197
H. E. Lawrence	1,445	C. Higby†	1,120
B. Ingram & Co.	1,345		

[Architect's estimate, £1,050.]

FELTHAM.—For painting work at the Feltham Industrial School, for the London County Council:—

R. Athey & Co. £174 8 0

GRANGE-OVER-SANDS.—For building an electric light generating-station, etc., at the Westmoreland consumption sanatorium, Meathop, for the Chairman and Committee. Mr. J. Hutton, architect, Kendal. Quantities by architect:—

W. Till, Grange-over-Sands £700

[All trades.]

HORNCHURCH.—For 281 yds. of 18-in. stoneware pipe surface water drain in Carter-road, for Romford Rural District Council. Mr. E. G. Boden, Surveyor, Victoria-chambers, Romford:—

J. Burrill	£302 1 4	T. J. Bailey	£186 18 0
J. Jackson	208 12 3	W. Iles	182 3 0
D. T. Jackson	204 15 0	W. Border & Co.	167 1 0
H. A. Gower	197 8 0	H. F. White, Hornchurch*	156 17 6
B. W. Glenny	192 13 0		

[Surveyor's estimate, £210.]

HORNCHURCH.—For 79 yds. of 30-in. armoured concrete tube surface water drain in Church-street, for Romford Rural District Council. Mr. E. G. Boden, Surveyor, Victoria-chambers, Romford:—

D. T. Jackson	£174 0 0	J. Jackson	£135 16 3
H. Gower	164 3 6	H. F. White	132 15 9
T. J. Bailey	147 10 0	Wilson, Border, & Co., Romford*	123 17 6
B. W. Glenny	145 12 0		
J. Burrill	143 17 0	J. Pennington	120 15 0
W. Iles	140 0 0		

[Surveyor's estimate, £110.]

KENDAL.—For building a villa residence, to be called "Ingleside," Sedbergh-road, for Miss Taylor. Mr. J Hutton, architect, Kendal. Quantities by architect:—

Wallers, Masons, and Tilers: J. Dixon & Son
Carpenter and Joiner: W. Hutchinson
Plumbers: T. & W. G. Garnett
Painter and Glazier: J. W. Wells
Plasterers: Woodburn & Storey
} £680

[All of Kendal.]

KENDAL.—For building a villa-residence to be called "Harwood Dale," Sedbergh-road, for Mr. E. Jones. Mr. J. Hutton, architect, Kendal. Quantities by architect:—

Wallers, Masons, and Tilers: T. Hine & Son
Carpenters and Joiners: Park Bros.
Plumbers: W. Jackson & Co.
Painter and Glazier: J. W. Wells
Plasterer: B. Davis
} £1,040

[All of Kendal.]

LARNE (Ireland).—For waterworks extension, for the Urban District Council. Messrs. Swiney & Croasdaile, engineers, Avenue-chambers, Belfast:—

R. C. Brebries	£8,256 0 0
J. Galloway & Sons	7,326 5 6
J. Graham	6,642 18 7
Fleming Bros.	6,091 2 1
C. H. Wallace	6,007 0 0
Thornbury Bros.	5,922 7 10
Grainger Bros.	5,394 17 2
R. D. Pollock	5,096 10 4
Higgarty & Gault, Ballymena*	4,935 6 5

LLANTRISANT.—For 250 lin. yds. of effluent drains, etc., at Llantrisant-common Outfall sewer, for Llantrisant and Llantwit Fardre Rural District Council. Mr. Cower S. Morgan, Surveyor, School-street, Pontyclun:—

A. G. Collins & Co.	£82 4 10	C. P. Oliver	£46 15 6
C. Sayers	63 5 4	T. Dyer	44 12 4
Barnes, Chaplin, & Co.	52 12 10	John & West	41 12 8
Evans & Murray	52 6 0	W. John, High-street, Llantrisant*	33 1 10

LONDON.—For removal of house refuse, street sweepings, etc., for twelve months, for the Holborn Borough Council:—

—	Dust.	Slop.	Joint Tender.
	£	£	£
A. Odell	9,255	5,000	14,255
G. E. Cloke	10,000	4,000	13,500
C. & A. Knifton	9,135	3,895	13,030
C. Abbott & Sons	8,500	4,500	13,000
J. Abrahams	7,150	4,250	11,400
A. Pannell	7,250	3,600	10,850
J. Battle	7,070	2,900	9,970
W. Clarkson & Sons*	7,000	2,870	9,870
H. Covington & Sons	—	5,745	—
H. Boyer	—	3,495	—
Wakeley Bros. & Co., Ltd.	—	3,142	—

OYSTERMOUTH.—For the erection of public sanitary conveniences, for the Urban District Council. Mr. W. P. Puddicombe, Surveyor. Quantities by Surveyor:—

G. Davies	£332 14 11	J. & D. Jones	£280 0 0
Bennett Bros.	312 16 9	J. G. Morris	272 0 0
J. Evans	300 19 2	J. Marles & Sons, Swansea*	245 0 0
W. Hayward	299 6 6		

RUGBY.—For building boundary walls on the east and west sides of workhouse premises, for the Guardians. Mr. T. W. Willard, architect, Rugby:—

A. Harris	£222 15 0	T. Reynolds	£174 18 0
W. T. Denyer	197 0 0	F. Hollowell	168 0 0
Lane & Gross	182 10 0	J. Winn & Son, Oxford-street, Rugby*	159 17 8½
C. W. Perkins	179 0 0		
A. J. Lord	178 0 0		

RUSHDEN (Northants).—For constructing a brick and concrete culvert and boundary walls in connexion with High-street, South, improvement. Mr. W. B. Madin, Engineer and Surveyor, Council-buildings, Rushden:—

W. G. Wilmott	£267 10	R. Marriott, High-street, Rushden*	£210 0
T. Wilmott	259 10		
J. Harrison	259 0		

[Surveyor's estimate, £220 5.]

SANDIACRE (Notts).—For erecting four pairs of villas, King Edward-street, for the Stapleford and Sandiacre Co-operative Society. Mr. W. H. Woods, M.R.S.I., architect and surveyor, Long Eaton. Quantities by the architect:—

General Contractors Work.

Musson	£2,390 0 0	F. Perks & Son, Ltd.	£2,034 0 0
Shelton	2,346 0 0	Gilbert & Hall	2,018 0 0
Brennan & Loftus	2,289 1 9	Birkin & Rowland	2,000 0 0
J. & J. Warner	2,268 0 0	F. Martin	1,997 18 9
F. M. Thompson & Son, Ltd.	2,259 0 0	E. E. Stevens, Long Eaton*	1,874 7 0
Brown & Son	2,060 0 0		

Plumbers and Glaziers Work.

Halling & Smith	£215 18 10½	F. Perks & Son, Ltd.	£175 0 0
J. & J. Warner	195 0 0	F. Martin	169 10 0
Hull & Son	188 0 0	J. Bonsall, Sandiacre, Notts.*	162 0 0
T. B. Brown	184 15 6		
Cooper & Berry	176 10 0		
S. Farmer	175 0 0		

STANLEY.—For private street works at South Moor, for the Urban District Council. Mr. J. Routledge, Surveyor, Council Offices, Stanley:—

R. Boiston	£548 6 11	E. Dyson	£452 6 1
G. E. Simpson	507 12 4	J. McLaren, Gosforth*	409 14 3
R. C. Birtley	502 0 3		
Johnson-Strong	456 2 9		

WALTON.—For the erection of engine and boilers house at Walton, for the Metropolitan Water Board :—

—	—	Forest of Dean stone in lieu of Portland.	White glazed facings and Portland.	White glazed facings and Forest of Dean.
	£	£	£	£
Dick, Kerr, & Co., Ltd.‡	68,472	67,777	69,542	68,847
Add for Ibstock bricks	—	—	115	—
Waring & White (1906)	72,431	74,385	73,316	75,270
McCarthy R. Fitt	78,494	80,536	79,705	81,747
G. Hay & Co.	79,520	79,616	80,761	80,848
Kirk & Randall	79,893	79,418	81,136	80,661
W. Moss & Sons, Ltd.	80,894	80,554	81,966	81,626
W. Shurmur & Sons, Ltd.	81,387	80,460	82,611	81,684
J. Aird & Sons	81,558	80,501	82,886	81,830
Holliday & Greenwood, Ltd.	82,378	84,001	83,365	84,988
Holloway Bros.	82,465	82,765	83,592	83,892
A. Jackaman & Son	83,000	82,720	83,878	83,598
W. Pattinson & Sons, Ltd.	84,085	83,499	85,162	84,576
Whitehead & Co., Ltd.	84,100	82,144	85,126	83,170
J. Mowlem & Co., Ltd.	85,000	84,600	86,135	85,735
J. Moran & Son, Ltd	86,179	85,754	87,558	87,133
W. Lawrence & Son	87,000	87,000	88,362	88,362
G. Munday & Sons	87,160	86,832	88,212	87,884
R. McAlpine & Sons	87,214	86,285	88,491	87,562
G. E. Wallis & Sons, Ltd.	87,289	86,479	88,372	87,562
A. N. Coles	89,566	88,753	90,579	89,766
McCormick & Sons	91,440	90,902	92,484	91,946
A. Leather	91,594	90,311	92,422	91,139
A. E. Nunn	92,739	92,017	93,729	93,006
F. Miskin, Ltd.	92,865	92,535	94,113	93,782
T. J. Hawkins & Co.	94,863	93,426	96,035	94,598
Foster & Dicksee, Ltd.	99,324	98,909	100,396	99,981
Muirhead & Co.	94,403	99,133	—	—
Perry & Co.	99,822	99,288	100,859	100,325
F. & H. F. Higgs	104,692	101,750	106,103	103,161
C. Wall, Ltd.	105,072	104,820	106,236	105,984
Hughes & Stirling	117,300	115,618	118,377	116,695
T. W. Pedrette	120,162	120,162	121,530	121,530

‡Accepted for white glazed facings and Portland.

SHEFFIELD.—For the steelwork in the extension to engineering workshop, Abney-street, for the University of Sheffield, Department of Applied Science. Messrs. Gibbs & Flockton, architects, 15, St. James's-row, Sheffield. Quantities by architects :—

L. Cooper	£1,085 4 9	Manchester Iron & Steel Co.	£727 10 0
Homan & Rodgers	850 0 0	S. Parsons & Son	679 0 0
T. W. Ward, Ltd.	750 10 0	J. Bagshawe & Sons	676 5 0
G. Oxley & Son	735 10 0	Redpath, Brown, & Co., Manchester*	624 2 0
Rubery, Owen, & Co.	733 17 6		

SHEFFIELD.—For extension to engineering workshop, Abney-street, for the University of Sheffield, Department of Applied Science. Messrs. Gibbs & Flockton, architects, 15, St. James's-row, Sheffield. Quantities by architects :—

Martin & Hughes	£1,771 10 0
B. Powell & Son	1,628 0 0
J. Mastin & Son	1,620 0 0
J. Eshelby & Son	1,575 0 0
Hollingsworth & Bedford	1,573 0 0
H. Freckingham & Son	1,545 0 0
J. Fidler, Ltd.	1,540 0 0
Ash, Son, & Biggin, Ltd.	1,540 0 0
T. Wilkinson & Sons	1,525 0 0
T. Roper & Sons, Ltd.	1,513 18 0
T. Fish & Sons	1,500 0 0
G. Longden & Son, Ltd.	1,490 0 0
Dawson Jones & Co.	1,486 7 6
J. Vasey & Son	1,477 5 0
D. O'Neill & Son	1,466 0 0
H. Boot & Son	1,398 0 0
G. Carr, Sheffield*	1,390 0 0

SUTTON.—For 2,500 super. yds. of tarpaving to footways, for the Urban District Council. Mr. C. Chambers Smith, Surveyor, Municipal Offices, Sutton :—
J. Wainwright & Co., Ltd., Shepton Mallet* £199

TOTNES (Devon).—For the construction of a water-tank at Follaton and for other work, for the Town Council. Mr. W. F. Tollitt, Borough Surveyor, 10, High-street, Totnes :—

Pethick Bros.	£877 0	E. Distin & Son, Totnes*	£405 10
E. Pike	482 10		
W. Reeves & Son	473 9		

UPMINSTER.—For 1,510 yds. of 3-in. cast-iron water main, etc., at Upminster-common, for Romford Rural District Council. Mr. E. G. Boden, Surveyor, Victoria-chambers, Romford :—

J. Pennington	£341 0 1	D. T. Jackson	£294 0 0
B. W. Glenny	340 10 0	W. & C. French	287 15 6
J. Jackson	313 19 0	Wilson, Border, & Co., Romford*	287 8 9
Griffiths & Co., Ltd.	313 19 0	J. Pearson, Wilson, & Co.	283 10 0
A. H. Ball & Co.	309 15 0		
H. F. White	297 3 0		

[Surveyor's estimate, £370.]

WHITLEY BAY.—For street works, Whitley Links Estate, for the Whitley and Monkseaton Urban District Council. Mr. J. Moore, Surveyor, Council Buildings, Whitley Bay, R.S.O. :—
G. E. Simpson, Newcastle—Schedule.

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